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ARE INSTITUTIONS FOR INFANTS NECESSARY? *

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NEW YORK

In considering the best conditions for the relief of acutely sick infants and for foundlings or abandoned babies, two important factors must always be kept in mind: (1) the unusual susceptibility of the infant to its immediate environment, and (2) its great need of individual care. The best conditions for the infant thus require a home and a mother. The further we get away from these vital necessities of beginning life, the greater will be our failure to get adequate results in trying to help the needy infant. Strange to say, these important conditions have often been overlooked, or, at least, not sufficiently emphasized, by those who are working in this field.

The subject naturally divides itself into two branches — the treatment of the acutely sick infant in a hospital, and the care of the foundling or abandoned infant in an asylum.

We will first consider the hospital. An important point to emphasize is that the stay of an infant in a hospital should be as short as possible. The reasons for this are obvious to those who have had much experience along this line. Unless the infant is quickly discharged after the acute symptoms have subsided, there is nearly always a slow but progressive loss of weight which bears an inverse ratio to the age, being especially marked under six months. If this atrophy gets beyond a certain point no change of environment or food will save the patient.

Another danger consists in the spread of specific infections, such as diphtheria, pertussis and the exanthemata. A child may be admitted in the late incubation period, and, if so, is apt to involve many others. These infections may also be brought by mothers or other visitors, acting as carriers. It is now considered that these diseases are spread by contact rather than by aerial transmission, hence the nurses and the children themselves may spread the poison from one to another. When any one of these diseases gets a foothold in an institution it is hard to stamp out the trouble without discharging all the patients in the affected ward, cleaning up the place and starting fresh with new cases. Otherwise, one patient after another will gradually succumb to an exposure from others who may be in the period of late incubation or early invasion. Measles and pertussis are particularly to be mentioned in this connection. Young children with nasal catarrh, enlarged tonsils or adenoids may harbor diphtheria bacilli that remain latent, which accounts for their being attacked without apparent hetero-infection, or, if not succumbing themselves, spreading the disease to others.

Perhaps the greatest danger in keeping sick infants long together, comes from the ordinary ward infections. The mucous membranes usually bear the brunt of these infections. We may thus have rhinitis, pharyngitis, tonsillitis, otitis media, bronchitis, bronchopneumonia and vaginitis. The latter is nearly always specific. It is generally the infants who have been longest in the hospital who succumb to these cross infections. The pneumococcus and streptococcus seem to cause most of the trouble, although, in certain seasons, the influenza bacillus is also very active. Hospital babies show a poor resistance to added infections; their immunizing power against bacteria and other infections seems to be largely lost after a certain length of time in an institution. The infants must thus be discharged at just the right time, when the acute symptoms have subsided and before the cachexia of hospitalism has had time to develop. In a word, in order to insure a good convalescence the infant must be kept in a hospital for only a short time; it must be carefully guarded from auto- and hetero-infection while there, and, finally, sent out to recuperate under as favorable conditions as possible.

I do not believe that the multiplication of infant's hospitals through the country should be encouraged. When infants need hospital care it had better be in small units. The dangers of cross infection must be guarded against by the most skilful nursing as well as by working in small units. There should be one good nurse to three or four sick infants so that there may be a chance effectually to apply the principles of aseptic nursing. Particularly at night, the nursing is too often ineffective from not having enough nurses in attendance. Large wards and large institutions are undesirable as far as the infant is concerned. Atrophic infants with chronic indigestion and malassimilation should never be treated in a hospital. A baby with marasmus will rarely live long in an institution. It is interesting in this connection to glance at the recent action of the Massachusetts Infant Asylum. This institution had developed two rather distinct branches of work — (1) the care of sick babies in its hospital at Jamaica Plain; (2) the placing of well babies at board in private families under the supervision of trained nurses. Later, a department for looking after unmarried mothers and a wet nurses' directory were added. As it seemed wise to revise this wide field of service, the hospital was discontinued and an arrangement made with the Boston Dispensary by which a certain number of beds were retained for babies who might need hospital care before going to board, or such as become sick while at board. The hospital feature of the work was thus reduced to a small unit and the boarding out system emphasized and enlarged. This is a step in the right direction. That more can be accomplished with sick infants by home treatment than has ordinarily been supposed, even in severe cases, provided proper nursing can be furnished, is shown by the figures in the accompanying tabulation, which have been furnished me by the Henry Street Settlement, New York:

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* Read at the Fifth Annual Meeting of the American Association for Study and Prevention of Infant Mortality, Boston, Nov. 12, 1914.

RESULT OF HOME TREATMENT OF SICK INFANTS

PNEUMONIA				
Birth to 2 years	**1910**	**1911**	**1912**	**1913**
Cured	986	1,251	1,423	1,596
Died	114	181	177	206
Total	1,100	1,432	1,600	1,802

DIARRHEAL DISEASES				
Birth to 2 years	**1910**	**1911**	**1912**	**1913**
Cured	249	339	263	273
Died	30	40	27	25
Total	279	379	290	298

As these figures run through a series of years, they should form a fair general average, and it is doubtful if any hospital can furnish as good results. They were all cared for at home and attended by their own physicians, but skilfully and carefully nursed by the trained nurses from the Settlement. If necessary, several visits a day were made until convalescence was fully established.

When home attention is impossible and the hospital care required, the best results will be obtained by an early discharge with a proper "follow-up" system bv a competent nurse. In this way the best and most permanent results will be obtained.

The next aspect of this question concerns the care of foundlings or abandoned infants in institutions. There is a sharp distinction to be made between hospital care for the acutely sick infant who cannot get proper home treatment, and the ordinary infant asylum. Both have high death-rates, but the latter starts and deals with a well, or comparatively well, baby, who gets sick or loses vitality during its stay in an institution. This makes a radical difference. I believe the plan of collecting babies in institutions should be abandoned, as, on the whole, doing more harm than good. Not only is the mortality under this system very high, but the surviving infants are rarely strong and healthy. In spite of good intentions and care in management, too often these institutions produce or aggravate the very conditions they are supposed to prevent. The danger of institutional care to infants is in inverse proportion to their age, being very great under one year and diminishing as the children grow older. This experience is world-wide, and it seems strange that more energetic steps have not been insisted on, especially by the medical profession, in the line of abandoning these old and futile methods. It is fair to state, however, that some of these institutions are waking up to different plans of action. In a historical sketch of the Foundling Hospital of London, it is stated that in 1756 a basket was hung at the gate in which children were deposited after ringing a bell. It is naively added that of 14,934 children received during three years and ten months, no less than 10,389 perished in early infancy. It is interesting to note, by contrast, that the infants on reception are now placed out to nurse with cottagers in the Kent or Surrey districts under the superintendence of medical officers and are returned to the hospital about the age of five. During 1910, 48 infants were received, of whom only two died under one year, and one under two years after being boarded out in the country.[1]

In a personal letter from the general secretary of Dr. Bernardo's Homes, the largest charity in England dealing with infants, the following statement is made:

> Years ago we established a large institution especially for babies, called our Babies' Castle. Accommodation was provided for 100 babies. The place was beautifully designed and perfected in every detail, but we found that the babies did not thrive and eventually we had to board them out and use the institution in question for those who were a little older. Our experience leads us to the conclusion that a large segregation of babies under one roof is fatal to their well-being and health, however carefully and well they may be looked after. . . . We do not hesitate to say that if a certain number of babies were first of all to be boarded out under good conditions and then segregated under one roof, it would be found that the death-rate would be four times increased in a year or two.

In a minority report of the British Royal Commission on Poor Laws, 1909, it is stated that the mortality among infants in the poor law institutions is between two and three times greater than that found in the general population. It is said:

> Out of every 1,000 babies born in the population at large, 25 die within a week and 132 are dead by the end of the first year. For every 1,000 children born in the poor law institutions, 40 to 45 die within a week, and, assuming the mortality among those who are discharged to be the same as those remaining, no fewer than 268 or 392 will be found to have died by the end of the year, the number varying according to whether we take the experience of the poor law institutions for legitimates or for illegitimates in the metropolis, or elsewhere. . . . The excess of infantile mortality in the poor law institutions is actually greater at the ages between 1 and 6 months, than during the first month of life. . . . It may well be that human infants, like chickens, cannot long be aggregated together, even in the most carefully devised surroundings, without being injuriously affected.

The facts learned by many years of observation and experience on this problem do not seem to be sufficiently appreciated by many in this country. If so, the large asylums and institutions for the care of foundlings and abandoned babies, would be abolished, with a consequent lowering of the infantile death-rate. In a monograph issued by the Division of Child Hygiene of the New York Board of Health, it is stated that during 1910, 42 per cent. of the total deaths of babies under 1 year of age in the Borough of Manhattan took place in institutions (inclusive of both foundling asylums and general hospitals).

In order to get a general idea of the usual death-rates in institutions that house many infants, I made a study of the statistics of ten of these asylums located in different cities as follows: New York, Buffalo, Boston, Providence, Philadelphia, Baltimore, Washington, Detroit, St. Louis and New Orleans. The time covered varied from four to twenty years, taking the shortest and longest intervals. The rates were based on the ratio between yearly admissions and deaths and were as follows: 53.17 per cent.; 40.6 per cent.; 40 per cent.; 60 per cent.; 31.7 per cent.; 75 per cent.;

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[1] Report of Foundling Hospital, London, 1910.

65.8 per cent.; 47.7 per cent.; 36.1 per cent.; 49.5 per cent. In all but one of these institutions the deaths included all infants under 2 years. As the greatest mortality is under 1 year, the showing would be worse if restricted to this age. The following figures taken from one of these institutions exemplify this point: During 1907, 320 were admitted; of these, 147 died under 1 year and only 18 between 1 and 2 years. During 1908, 417 were admitted, and of these, 113 died under 1 year, and only 12 died between 1 and 2 years.

There is no doubt that the figures cited above give a fair average of the mortality when young infants are collected together in numbers and treated in mass. The high mortality is not so much due to lapses in care or details in management as to the system itself, which fails because it is wrong. As a contributing cause, however, it may be mentioned that rarely, if ever, is sufficient individual care given to infants in institutions. As a result, the condition of those who live is apt to be decidedly below the proper development for the age. It is only fair to say that many babies sent to these asylums are in poor condition from neglect and hardship — sometimes even moribund — but still it is equally true that a very much larger proportion could be saved by a different method of handling them.

This consists in placing them in individual homes where the many risks and dangers of the institution will not exist, even though the domicile be crude and rough. The baby will do better here in the long run than in the most immaculate ward, but visiting and watching will be required. The full benefits of boarding out cannot be obtained without proper and continuous oversight, preferably by a trained nurse. This constant supervision is rarely carried out as it should be under the direction of a physician. Thus in one institution, about 700 boarded-out babies are looked after by only four visiting nurses. In this case, it is manifestly impossible to be sure that the babies are receiving the proper medical and hygienic care.

Boarding out must be more systematized and the same detail and routine that are usually employed in institutional work should be applied here. Twelve years ago I instituted a plan of boarding out atrophic or abandoned babies in which the following features were emphasized: (1) Boarding out in a certain district of the country noted for its healthful conditions. (2) Constant attention to diet and hygiene on the part of a physician and nurse who are thoroughly familiar with this class of cases and competent to deal with them. (3) The infants are kept as long as necessary, until feeding is regulated and digestion and assimilation are improved sufficiently to result in an increase in weight. The work is kept up during the whole year and not limited to certain seasons. (4) The training in a given neighborhood of a number of foster mothers, who, by constantly taking these infants into their homes, become fairly expert in handling them under conditions totally unlike those offered by the best institutions and far superior to them. This work has been in successful operation ever since under the control of the Speedwell Society at Morristown, N. J.

This plan can be employed in any place, with such variations as may be required by the special locality. Thus in a large city it may be best to work in distinct districts which can easily be overseen by some one familiar with the neighborhood and its people. This means a more intensive working in many small fields, but all cooperating in a common system. A few small collecting stations that would act as clearing houses can take the place of the large institutions and furnish the doctors and nurses necessary to carrying on the work. A vast field can thus be covered, but the actual work must be done in small units, each represented by a certain district or locality. Relief will thus be instituted along the lines of family life, with individual supervision, instead of the collective life with institutional methods.

The unit of civilization is the family which offers the healthiest physical environment. The most susceptible member of the family to all external conditions is the infant. When transplanted from natural and normal conditions, the little ones quickly droop and suffer most. We must see to it that relief is afforded in the most natural and effective way to these unfortunates who come under our care. For this reason the infant asylum must go. Cottages must take the place of barracks. An increased knowledge of the real needs of infant life will not tolerate the old methods much longer, for a larger and wiser human spirit is at work on these problems, which is not content to put up with evils that can be avoided. If the present workers in this field will not improve their methods, then some future generation with wider vision, truer courage and broader human feeling will accomplish this needed reform.

EXPERIENCES OF THE NEW YORK HEALTH DEPARTMENT IN TYPHOID IMMUNIZATION

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NEW YORK

Preventive medicine, despite its brilliant advances in recent days, has met momentary checks, when, as happens from time to time, some apparent instances of its failure to protect from disease have come to light. That element of our lay population which suffers from constitutional timidity and which can be induced only with difficulty, if at all, to adopt the teachings of this newest and most helpful branch of medicine, jumps eagerly at these apparent examples of failure. It makes them serve as justification for relapsing into the helpless and fatalistic attitude toward disease which has come down through the centuries from the dark ages. These particular instances of the so-called miscarriages of prophylactic medicine are trumpeted far and wide and marshaled to serve as evidence against its value, long years after impartial scientists have disproved all criticism and vindicated the signal virtues of this newest department of medical science.

Error and hasty and mistaken conclusions die as hard to-day as ever in the history of scientific progress. In common with every method of treatment that has ever been inaugurated, antityphoid prophylactic treatment has been opposed at each step of its progress by criticism which has sometimes been ignorant, or unscholarly, or malicious, or even all of these. Russell has already paid his compliments to these groups. This study of antityphoid immunization is therefore offered to answer unsound criticism as recently expressed in connection with a series of cases that received conspicuous notices in the New York press. Also it aims to give to those general practitioners who have read the necessarily insufficient and confused comments on these cases in the lay press and even in some of the medical journals a knowledge of facts interpreted scientifically, that they may in their praiseworthy office as teachers be reassured and reinforced in their belief in the value of this protective measure, and may impart with renewed enthusiasm and conviction the full measure of their belief to their pupils—the public.

THE EARLY HISTORY OF ANTITYPHOID VACCINATION

Almost simultaneously in 1896, Pfeiffer and Kolle in Germany, and Wright of Netley, England, published the results of experiments in the prevention of typhoid fever by vaccination with *Bacillus typhosus* killed by heat.

For several years preceding, a group of workers including Dunbar, Fränkel, Simmonds and Stern, had been occupied with the problems of immunology in typhoid fever. Wright made an extensive application of these experiments, vaccinating large groups of men in the British army. His results were not as favorable as had been expected, and the procedure met a setback until Leishman, who had been working with Wright, again essayed the use of this prophylactic measure on a large scale on the men in the Indian service of the British Army. He had concluded that their failure to achieve the success they had anticipated in their first trials was due to a superheated vaccine. This fault was corrected and Leishman's work gave a new impetus to those interested in the subject.

When, subsequently, Wright announced his theory of the negative phase, and the increased risk of infection with typhoid fever, during the period of this phase, progress for a time was again checked. The cumulative, practical experience of Leishman, however, enabled him to refute this theory most emphatically, and to prove conclusively that whatever force it had was more theoretic than real, and "that the most important evidence must come from actual practice, rather than from laboratory experiment." Indeed, Pfeiffer and Friedberger disproved this in laboratory tests on guinea-pigs, as did Leishman in 100 cases at the Baring asylum. Wright himself since 1909 has receded from this position to a very great degree.

In 1911, Major F. F. Russell, than whom there is no more competent authority on this subject in this country, had so far advanced its use among 20,000 men in the United States army that he could assert of those using it that "we knew that the preparation we were using was harmless; we knew too that it caused few severe reactions in *healthy persons,* and that no vaccination, however severe the immediate reaction may have been, had been followed by permanent injury to the individual; and *further that by all laboratory tests the immunity conferred was identical with and equal to that remaining after typhoid fever.*"* The brilliancy of the results achieved by Major Russell at San Antonio, and subsequently, on an even larger scale in the army, results which now have become almost classical, led to the enactment of the compulsory antityphoid vaccination law by the United States government.

In France, in 1913, a similar law was passed, making vaccination against typhoid fever compulsory in the French army.

Fully 85 per cent. of the men in the Indian service of the British army have been vaccinated, although no legal compulsion has been employed by the British government.

In the years that have elapsed since 1896, the evidence of the value of this measure is undoubted, and has grown overwhelmingly; so that when the death-rate in the United States was 16.5 per hundred thousand, that in the United States army during 1912 was 0 per hundred thousand. Further examples selected *from this accumulated testimony, as they bear on the* analysis of our cases, will follow. Well has Russell said, "Our experience since 1909 has left no doubt about the success of antityphoid vaccination in the army and navy. The measure has come to stay."

THE VACCINE—DESCRIPTION AND MODE OF PREPARATION

The prophylactic injections that have been in use have been differently prepared by the various men who have administered them: Leishman in the British army and Russell in America, as well as most other Americans who have employed this procedure, have used a single strain (the Rawlings strain) which is of low virulence. The French prepare a polyvalent vaccine of as many as ten strains, consisting mainly of those found in the neighborhood where an outbreak of typhoid exists. Even in America, some, like Hunt in Troy, Pa., have employed a polyvalent vaccine in which has been included the *B. paratyphosus* A, and *B. paratyphosus* B of Gaertner. Needless confusion in the minds of those not familiar with this subject has been caused by the description of these and a variety of other preparations of vaccine.

Metchnikoff and his pupil, Besredka, for instance, have used a vaccine consisting of an emulsion of living typhoid bacilli sensitized by antityphoid serum. Up to 1913 this vaccine, first employed on chimpanzees, was injected into 800 persons in an institution, without any case developing after its use. One soldier in Africa so treated died of typhoid fever, but Metchnikoff explains this as being due to a dose that was entirely too small. Also, forty-eight patients with pronounced typhoid fever were treated with this vaccine. But the consensus of opinion is that aside from the danger of producing carriers, it is far safer to use the sterilized single Rawlings strain of low virulence, which has proved so brilliantly effective in England and the United States.

Chantemesse has produced an antityphoid serum obtained from horses, which has not been approved of by others.

The New York Board of Health vaccine conforms in every particular but one to the army vaccine; the exception being that phenol (carbolic acid) has been substituted for trikresol as a preservative, because of the lessened pain caused by its injection.

The culture used by the Department of Health is prepared at its Research Laboratory and is made as follows:

> "A laboratory culture of typhoid bacilli which has lost much of its virulence through long artificial cultivation is used. Large surfaces of agar in Blake bottles are inoculated from fresh agar cultures. After twenty-four hours' growth

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* Italics, the author's.

at 37 C. the bacteria are washed from the surface of the agar with normal salt solution. The suspension is then standardized by counting the bacilli by the Wright method. This is done by mixing an equal part of blood and the bacterial suspension. Smears are made from this mixture and stained. The number of bacilli and red cells are then counted under the microscope in about twenty-five fields. When the proportion between the two has been determined, the number of red cells per c.c. being known, the number of bacilli per c.c. can then be estimated; this suspension is then heated one hour at 56 C., to kill the bacilli. After heating, the sterility of the suspension is tested by inoculating generous amounts into media and incubating these under aerobic and anaerobic conditions. If no growth occurs, 0.25 per cent. of carbolic acid is added to the suspension which is diluted with 0.25 per cent. carbolic acid in normal saline solution so that one c.c. contains the appropriate dose. It is then bottled for distribution."

CASE REPORTS AND COMMENTS

Whenever we add to the sum of our knowledge and experience, we describe a larger circle to embrace the new as well as the old, and so in this study, even if we contribute little that is essentially new, we believe it well in what follows to include a review of much that has gone before, so that a comprehensive and better correlated picture may the more vividly appear.

In the following are presented the histories of the cases whose atypical features offer several problems of interest, and which have prompted this survey of the work of the New York Department of Health in the field of antityphoid prophylactic treatment.

It will be noted that they fall into four classes:

Class 1. In which death has been attributed to antityphoid inoculation, and was really due to another cause, the prophylactic treatment being a mere coincidence.

Class 2. Severe reactions within a few hours after treatment.

Class 3. In which immunization was partial and insufficient, the patients having been long exposed and already in the stage of incubation when treatment was begun.

Class 4. In which a complete course of prophylactic treatment failed to give immunity, and was followed after a relatively short interval by an attack of the disease.

CLASS 1. COINCIDENCES

CASE 1.—C. P., aged, 25, a member of the National Guard, received three injections of antityphoid vaccine in January, 1914. He reacted very moderately to these injections, and for several weeks thereafter continued in good health. Early in March, that is, two months after immunization, he became ill, and the physician who attended him diagnosed his illness as influenza. Just before his death, which occurred March 30, 1914, another physician who was called in diagnosed his case as typhoid fever, and so certified in the death certificate he issued.

Acting on the protest of the surgeon of the regiment to which the patient had been attached, the Department of Health refused to accept the death certificate, and a necropsy was therefore ordered.

April 2 the coroner's physician performed the necropsy, and established the absence of typhoid lesions. The heart was found to be the seat of a malignant ulcerative endocarditis. The skin showed petechiae, and septic infarcts were found in various parts of the body, the kidneys particularly.

This case, in which malignant endocarditis ran such a deceptive clinical course that the physicians in attendance were led to believe they were dealing first with influenza and then with typhoid fever is of a type not unfamiliar in clinical medicine and which frequently remains obscure as to diagnosis until it reaches the necropsy table. Such an erroneous charge against typhoid vaccination as this needs no further refutation. The entire lack of logical sequence between vaccination and the ultimate cause of death is clearly evident.

It is reminiscent, however, of the early history of small-pox vaccination, in which, in the case reported by Broeckerhoff, the Jennerian operation was followed by an illness which was held to be small-pox, and because it resulted in death, seemed, until cleared up by necropsy, an aspersion on vaccination, Death in this instance proved to be due to hemorrhage from a typhoid ulcer, and not to the use of vaccine. So once again, it is interesting to note how consistently history repeats itself.

CLASS 2. SEVERE REACTIONS

CASE 2.—A clerk in one of the divisions of the Department of Health was injected one afternoon with antityphoid vaccine, and it was noticed that on withdrawal of the needle a free stream of dark blood followed. This was interpreted to be due to the puncture of a vein. Not more than half an hour later, he was seized with sudden faintness, his skin became pale and clammy, he complained of headache, showed dulness of intellect, and temperature of 103. These symptoms did not last more than a few hours, and the next day he was up and about ready to return to work. The entrance of the vaccine directly into the venous stream was held accountable for the train of symptoms; but no lasting or serious results remained.

Occasionally an urticarial rash on the chest and abdomen, lasting for a week, has been reported, as has also herpes facialis following these injections.

HISTORIES OF CASES 3, 4, 5, 6 AND 7

Introduction.—Mr. M. arrived at his home in Brooklyn from a business trip through the Southern states, April 23, with a history of illness of ten days' duration. Mr. M.'s physician submitted a specimen of his blood for a Widal test to the New York Department of Health, and on April 25 he was informed that it gave a positive Widal reaction.

At noontime, May 3, in compliance with Mr. M.'s request, the physician administered an immunizing dose of Department of Health vaccine to each of the four presumably well members of the family, consisting of his wife and three children, Ruth, Herbert and Raymond. May 16, Mr. M. died. Mrs. M.'s sister, a Mrs. R., who was present when the prophylactic injections were administered, also received one.

CASE 3.—Mrs. R., the sister-in-law of Mr. M., returned to her home in New York, a distance of at least five miles, and subsequently stated that she had been feeling "very sick" that night. She called no physician to see her. No temperature record or other competent observations were made at the time. She was entirely well in two or three days and able to perform her regular duties. Her case is mentioned because, in association with the four that follow, it served to inspire the criticism and detraction of a few organs of the lay press and, forsooth, of a medical journal too. In common with Herbert M. and Ruth M., whom Mrs. R. brought to her New York home, five miles distant, directly after they had received prophylactic injections, she made a journey, the length and fatiguing nature of which were contra-indicated after immunizing treatment.

Cases 4, 5, 6 and 7 will be briefly mentioned in this class and again in the next, because they illustrate both the phenomenon of a severe reaction, and the futility of preventive inoculation when administered during the period of incubation.

CASES 4, 5, 6 AND 7.—These four cases are those of Mrs. M. and her three children, two of whom, Ruth, aged 4½, and Raymond, aged 6 years, made the long trip to New York with their aunt. Within twelve hours after their injection all are reported as having been "very sick," but temperatures were not taken, and no more precise and detailed clinical notes are on record as to this particular period than is contained in the foregoing incomplete statement of symptoms. Mrs. M. felt well again within two or three days, and continued nursing her husband. The other children also showed but a temporarily severe reaction, with an interval of comparative moderation in symptoms, preceding the conditions to be outlined in that part of the history which is assigned for description in the next class.

In these five cases in which severe reactions were reported to the family physician by the patients themselves, several factors were operative. First, the comparatively long journey to New York made by three of those treated; secondly as will appear from the subsequent history, the M. family so treated were not in good health and probably then already in the period of incubation of the disease.

Of this class, characterized by severe reactions that ue at any time, either immediately after the injection of an immunizing dose of vaccine, or from twelve to forty-eight hours later, much may be said by way of impartial critical comment.

Practically our entire navy has been vaccinated without a single serious result or casualty being noted; and less than 1 per cent. of the men were obliged to rest in bed or be excused from duty as a result of the reaction that followed.

Russell in 128,903 cases observed severe reactions as follows:

After the first dose, 0.3 per cent. in 45,680.

After the second dose, 0.2 per cent. in 44,321.

After the third dose, 0.1 per cent. in 38,902.

Authoritative writers define a severe reaction as one racterized by a temperature of from 103 to 104, malaise, vomiting, diarrhea and chills.

Spooner, in 400 cases, noted severe reactions in 4 per cent.; moderate reactions, consisting of malaise, headache and a temperature of not above 100.5 in 10 per cent., and very slight or absent reactions in 86 per cent.

Hachtel and Stoner of Baltimore immunized 1,326 persons with an absence of symptoms of distinct reaction in 1,160, or over 87 per cent.

Malaise appeared in 775.

Headache appeared in 835.

Muscular pains appeared in 106.

Nausea and vomiting appeared in 60.

Chills appeared in 57.

Temperature rise appeared in 884.

A study of the temperatures gave the following results:

Temperature normal to 101 in 785.

Temperature from 101 to 103 in 82.

Temperature over 103 in 17.

In 1,945 persons on whom they employed a monovalent strain of vaccine, they found that 95.8 per cent. had normal temperature or only a slight rise; in ninety-nine on whom the polyvalent vaccine was used, a normal or slight elevation of temperature was observed in only 80.7 per cent. In other words, severe reactions seem more likely to follow a polyvalent vaccine.

Ravenel of Wisconsin vaccinated 1,900 and noted mild reactions in all but two, who after receiving their third injections had drunk heavily.

Weston, in an experience with 898 persons to whom he administered prophylactic treatment, found a severe reaction after the first dose in 883; a severe reaction after the second dose in 880, and a severe reaction after the third dose in 895.

Of those who received this treatment in the French army, at home and in Africa, severe reactions were noted only in those who were ill or fatigued at the time of the injection, this, despite the fact that a polyvalent vaccine (consisting of ten strains) was employed.

Dr. John W. Brannan, using the New York Department of Health vaccine at Bellevue Hospital on 200 nurses, fifty of the physicians on the house staff, and also on a few male patients in his private practice, reports that of these, only three nurses asked to be relieved of their duties for one day, several interns had a rise of temperature as high as 102, and one doctor had a temperature of 103, with headache and abdominal pain after each of two doses.

Rukke of St. Louis, vaccinating 11,007 cases, giving 33,021 injections in all, noted severe reactions in eighty-seven who, in conformity with practice in the United States army, had received simultaneous smallpox vaccinations. Of these eighty-seven, 50 per cent. had vaccinia reactions or reaction from measles or other infectious diseases. Only one case of musculospiral neuritis developed in an officer as the result of trauma to a nerve. He asserts, on the basis of experience in the families of officers living in the camps, that children bear the inoculation well, even at as early an age as 3 years.

Pensuti, using higher doses of vaccine than those generally employed, vaccinated eight children (from 7 to 12 years of age), without subsequent trouble.

All these citations are to show that the occasional occurrence of a severe reaction has been acknowledged and understood by all competent authorities. The severity of these reactions is determined, as already mentioned, by debility from illness (tuberculosis, etc.), marked fatigue, alcoholism or undue exertion in those subjected to prophylactic treatment. In other instances, injection of the vaccine directly into a vein, or its intramuscular administration, has accounted for very marked reactions.

In civil, as distinguished from military communities, whenever a case in which a severe reaction has appeared has been given publicity, it is usually a professional brother who helps spread misinformation with the benevolent suggestion that a contaminated or improperly prepared vaccine has been responsible for such serious result. This charge, if true, is indeed a grave one. Let us examine it: The heating of the suspension of bacilli that is used in preparing the vaccine, at 56 C. (132.8 F.) and the subsequent inoculations into mediums incubated under aerobic and anaerobic conditions to test the sterility of the suspension, together with the final addition of 0.25 per cent. phenol, would surely preclude contamination. The only organisms that might then possibly be present as contaminating ones, would be the tetanus bacillus or staphylococcus. The presence of these organisms could surely be recognized—the tetanus organism by the characteristic symptomatology resulting from its action, and the staphylococcus by a localized infection at the site of injection. From the history of the cases thus far given, and as it subsequently appears, it will be clearly apparent that neither of these contaminations of the vaccine were present.

All those who are acquainted with the character and the organization of the Research Laboratory of the New York Department of Health, will feel assured that the vaccine is prepared with every caution and safeguard against contamination. Moreover, Drs.

Curran, W. S. Hubbard, F. Harnden, C. R. Love and Dudley, of Brooklyn, employed vaccine of the same stock as the foregoing on members of their own families and on private patients without a single severe reaction or untoward result.

CLASS 3. PARTIAL AND INSUFFICIENT IMMUNIZATION

The history of Cases 4, 5, 6 and 7 is resumed under this classification because after the severe reaction caused by the single injection, which each of these patients received, and the short interval of freedom from complaint that ensued, the symptoms of typhoid fever made their appearance in each case.

CASE 5.—Ruth M., aged 4½ years, became ill May 7, and was brought back to her home in Brooklyn, from New York, by her aunt. The temperature became high (about 104) and hovered about that point for a number of days, while signs of severe meningeal irritation supervened, that is, marked opisthotonos, stupor, muscular rigidity and loss of sphincter control—justifying the name frequently applied to typhoid, *Nervenfieber*. Lumbar puncture, performed May 20, proved negative for meningococci, and the spinal fluid was clear and under considerable pressure. A blood count at this time gave the following results: Polymorphonuclears, 41 per cent.; small lymphocytes, 47 per cent.; large lymphocytes, 9 per cent, mononuclears, 3 per cent.

The Widal test showed agglutination in dilution of 1:60 in ten minutes; 1:120 in ten minutes; partial agglutination, 1:500 in ten minutes; complete in thirty minutes; partial agglutination, 1:1,000 in thirty minutes; complete in one hour.

May 22, an examination of the feces showed typhoid bacilli. There was no doubt therefore that this was a case of typhoid fever which became manifest shortly after a single injection of antityphoid vaccine. The patient subsequently made a complete recovery.

CASES 6 AND 7.—The other children, Raymond, aged 6 years, and Herbert, aged 11 years, also developed symptoms of typhoid fever several days after they had recovered from their severe reactions. Raymond's case ran a brief and uneventful course. Herbert had a moderately severe attack of several weeks' duration with a relapse. These two also made complete recoveries.

CASE 4.—Mrs. M., the mother, who had been assiduously nursing her husband until the time of his death, May 16, and then had similarly cared for her children, kept at her work even when initial symptoms of typhoid fever had made their appearance. Like so many ambulatory cases, the date of onset of her illness could not be definitely established. Despite malaise and an increasing feeling of illness she continued her household duties and the care of her children until June 13, when her physician reported her ill with typhoid fever. On June 15 she died of intestinal hemorrhage.

Clearly this unfortunate family continuously and intimately in contact with a typhoid fever case for a number of days, before a single vaccine injection was attempted, had incubated the typhoid bacilli too long to make effective the antagonistic and immunizing power of antityphoid vaccination.

A study of the third class of cases assumes special importance, because it raises the question whether it is a safe and proper practice to vaccinate those who are much exposed in an epidemic, or in intimate contact with typhoid fever cases, in the capacity of medical attendant or nurse. Here too, isolated examples are of no value in helping one to arrive at a judgment of the value of prophylactic treatment, and one must perforce utilize all available records from authoritative sources, and from such cumulative evidence derive one's conclusions.

It was in connection with this type of case that Wright offered his theory of the negative phase, and expressed his disapproval of antityphoid inoculations during the period of its presence. His theory and the arguments in its support were based on laboratory experiments, and when they were first promulgated, many excellent clinicians were persuaded by their apparent validity to oppose such prophylactic treatment during epidemics. A characteristic example is McCrae who, in his article on "Enteric Fever" in Osler's "System," said, "It is evident that it would not be wise to vaccinate during an epidemic, as the procedure apparently makes the individual less resistant to infection for a time."

As has already been stated in a previous section, Leishman in a series of practical tests conducted on 100 individuals exposed at an asylum, made observations that refuted Wright's theoretic views, and in this he was seconded by a goodly number of careful clinicians and laboratory workers. Of the latter, Pfeiffer and Friedbergers' experiments were particularly valuable.

Cullinan of Dublin, a pupil of Wright, inoculated 500 persons at the Richmond asylum during an epidemic of typhoid fever that lasted five months, and only 1.35 per cent. contracted the disease; and those who came down with it were already in the incubation stage. Of the 114 uninoculated nurses, 14.9 per cent. developed typhoid fever.

Spooner inoculated 29 out of 65 persons in a small Vermont town, at a time when 17 had already been brought down by an attack. Of these 29 only one person (3.5 per cent.) contracted typhoid fever, whereas of 19 who had refused vaccination, 5 developed the disease—26.3 per cent.

Hunt, who in 1912 took charge of the situation in Troy, Pa., where an epidemic was in progress, and who, judged by his report at the time, is not an enthusiast as to antityphoid prophylaxis, found 1,343 persons who had been definitely exposed. Of 761 who accepted vaccination and were well at the time of the first injection, a total of 37 (4.86 per cent.) developed typhoid fever. Of these 37 cases, 28 occurred after the first injection, 7 after the second and 2 after the third injection. Contrast with this the 582 who were not vaccinated and among whom 65 (14.28 per cent.) came down with enteric fever. Whatever his deductions from the facts observed may have been, his testimony, taken together with that of others, seems strongly to argue for a decided protective action of the vaccine even in the presence of an epidemic. Even his mortality statistics would tend to confirm one's faith in the value of protective inoculations, for, of the 37 cases that appeared among the vaccinated, there was but 1 death (0.27 per cent.) as opposed to 17 (8.85 per cent.) among the 65 unvaccinated. Hunt takes issue with Spooner, who believed that there was an acceleration of the onset in the infected vaccinated cases. The former contends that the incubation period was prolonged, and the onset consequently delayed until many days after the second inoculation in four cases, and until seven days after inoculation in another case. The evidence which these particular cases furnish strongly offsets, in Hunt's opinion, the prompt appearance of typhoid fever in 11 cases after the first inoculation.

Nor are these by any means isolated instances in which antityphoid vaccination during epidemics gave an excellent account of itself. It has been recognized that the exposure of hospital attendants, nurses, etc.—particularly nurses who do night duty—predisposes them to typhoid fever, in many cases, quite as much as would an epidemic. Observations made on this group, therefore, are of telling value. Also it should be borne in mind in this connection that nurses are known to be many times more liable to contract the disease than are the others of a city's population; Joslin and Overlander of Boston have found that the incidence of this disease is from eight to twelve times greater among them; while Hachtel and Stoner found the rate among this group of workers for five years in Baltimore, 500 per ten thousand nurses and hospital attendants, or from twelve to twenty times greater than in the city generally. Yet at the Massachusetts General Hospital, where immunization was carried out for three years, the morbidity was only 1.4 per cent., or 19 cases in 1,361, even including nurses on night duty. In Baltimore, likewise, the institution of vaccination abolished the disease among the nurses (among 82 nurses during five years who had not been vaccinated, 7 or 8.5 per cent., contracted typhoid fever).

Ravenel, in a small town in which an epidemic was at its height, vaccinated 116 persons, and not one new case appeared thereafter.

Wright and Leishman vaccinated at Maidstone, when an epidemic had attained its maximum intensity, and with success. At Torrington, Conn., of 80 nurses who were employed, 45 accepted vaccination and remained free from the disease, while of 35 who refused the treatment, 3 cases subsequently developed.

Peterson reports that in one house in which the sanitary conditions were of the worst, there were 14 occupants of whom 7 were down with typhoid fever. The remaining 7 were immunized and no further cases developed.

From this summary of statistical data, which could be greatly enlarged on, it must appear that the fear of a negative phase, and the withholding of immunization from those closely in contact with typhoid fever cases, is not grounded on sound and logical reasoning. The experiences of scientific and conservative observers combine to prove the merit of this prophylactic procedure, and should commend it as a duty to those charged with the care of the community's health, wherever and whenever typhoid fever appears in its midst.

Moreover, the freedom with which conservative clinicians in constantly increasing numbers employ the vaccine as a therapeutic measure, to moderate the severity of this disease when already established, and to diminish its mortality rate, should serve to dispose of any distrust of its effects, which still lingers in some quarters. Wright believes that through its use, *the incidence of typhoid fever is diminished about one-half, and the mortality rate still more.* These statements are not to be construed as a support of those who believe in the therapeutic efficacy of the vaccine, for that is still *sub judice.*

Hornor's studies in the therapeutic employment of the vaccine in 40 of 135 cases, while they show no decided advantage from its use as a curative agent, exhibit, however, no evidence that could in any manner be construed as an argument against the safety of its administration. In addition, the restricted scale on which he has employed it cannot make his experience serve as more than a preliminary experimental note. Compared with Wright's extensive experiences, the limitations of Hornor's report can be better understood.

Russell further reports that in the navy, one mild case followed the second injection. Another man at Guantanamo, Cuba, received one dose, and two days later complained of headache, had a temperature of 104.6 and manifested dulness of intellect. In twenty-four hours he became rapidly worse. He died seventy-six hours after admission to hospital, and seven days after vaccination. The necropsy showed that he was at the beginning of the third week of the disease. The infection was one week old when the single dose of vaccine had been administered. Ambulatory cases are notorious for developing severe symptoms late in the course of the disease, and for their high mortality rate.

The case exemplifies strikingly the manifest difficulty of determining in these exceptional instances whether typhoid infection has already gained a foothold, and is like the cases of Mrs. M. and her daughter Ruth, as recorded in the preceding case reports.

In the *Lancet,* W. Broughton-Alcock reports the use of living sensitized typhoid bacilli (in contradistinction to the killed bacilli employed by Wright and Russell) in 750 persons, in whom he found it innocuous.

Major Russell in a report in May, 1914, says, "The conclusion is inevitable that the prophylactic vaccine as used in the army has given almost absolute protection against typhoid fever, without producing untoward effects of any character, showing definitely that the vaccination is both efficient and harmless." Those who make the point of their criticism the failure of vaccine to confer *absolute immunity,* despite the exposure of some patients to exceptionally large doses of typhoid bacilli, or debilitation which has made the body's resistance to the organism ineffective, are unrelenting and unreasonable judges who will be satisfied with nothing less than perfection. Aside from personal idiosyncrasies which may determine failure to produce antibodies, it must be conceded that exhaustion, or the implantation and growth of a virulent strain of typhoid bacilli may have gained too great a headway to be offset by one or more immunizing doses of vaccine. Even small-pox vaccination, the brilliant achievements of which are accepted by scientists, occasionally fails to confer immunity. Likewise, the administration of diphtheria antitoxin may be deferred so long that the body of the patient is overwhelmed by toxins, and no amount of this effective agent can neutralize the effects of the poison; or, if an antecedent exhausting illness makes the body a ready prey to the virulent diphtheria toxins, it outstrips the neutralizing antitoxin, and the patient succumbs. And yet, though not infallible, diphtheria antitoxin, and possibly, too, the prophylactic use of tetanus antitoxin and antirabic treatment, will continue as our most potent weapons in those diseases. There is scarcely a potent therapeutic measure that has not its limitations or contra-indications.

CLASS 4. FAILURE OF IMMUNITY

This class embraces the cases in which a course of immunizing treatment has been completed, and in which the patients are, nevertheless, after a relatively short interval brought down with an attack of typhoid fever. Here opponents of this measure have found a fertile field for criticism. And it would seem to those not familiar with the literature of the subject that in this particular a significant and incontrovertible objection to immunization has been advanced.

Case 8.—Among a group of cases that developed in October, 1913, in a neighborhood on the lower east side, where infection had been spread through the milk supply, there were four cases in an Italian family, affecting the mother, a Mrs. C., and three of her children. Through the visits of two married daughters and their children, three additional cases developed in their respective families. A third married daughter, a Mrs. L., whose history illustrates the theme under consideration, also visited quite frequently but was prevailed on to accept prophylactic treatment. Accordingly, two doses of 500 million (killed typhoid) bacilli each, were administered, on October 15 and 25 respectively. November 6, 1913, a final dose of one billion bacilli was injected. These were administered by the Department of Health representatives. All went well with Mrs. L. and her family until March, 1914, when her four children, each in turn came down with typhoid fever, in the following order: Rocco, aged 10, March 10; Theresa, aged 4, March 19; Louis, aged 8, March 19, and Daniel, aged 12, March 29. Subsequent examination of the stools of the grandmother, Mrs. C., at the Research Laboratory, showed typhoid bacilli. She had been the carrier to whom the infection of these cases was traced.

Mrs. L., aged 30, who was about three and a half months pregnant at this time, nevertheless devoted herself assiduously for a number of days to nursing her children and attending to household duties at the same time, until the children were sent to Bellevue Hospital. Despite the fatigue and weakness induced by her overexertions, she continued daily to visit the children at the hospital. (The children ultimately recovered).

April 1, 1914, subjective symptoms of marked lassitude and headache appeared. These Mrs. L. attributed to her pregnancy and gave them no further heed, although they steadily became worse during the second week. At this time sharp cramps developed in the right lower quadrant of the abdomen and persisted despite active catharsis. For four days prior to April 21, her headache, fever, abdominal pain and vomiting grew constantly worse. April 21 she was admitted to the service of Dr. W. Gilman Thompson of the Second Medical Division of Bellevue Hospital. The Widal was positive and a blood count showed 5,000 leukocytes (polymorphonuclears 78 per cent.). The spleen was enlarged and an atypical roseolar eruption was present. April 24, at about the fifth month of gestation, she miscarried, as pregnant typhoid fever patients so often do, but this had no influence on the temperature or the course of the disease. Dr. Thompson from his clinical study of the case diagnosed it as one of typhoid fever. April 28 she died. It is to be regretted that no blood cultures during life, or from the viscera after death, had been made. At necropsy, characteristic typhoid lesions were found in the bowels. Peyer's patches in the ileum were greatly swollen, indurated, red and showed ulceration; the spleen was considerably enlarged.

The case of Mrs. L. is then one of a series in which a debilitated condition (in this case from pregnancy and the worry and fatigue incident to nursing her three children affected with typhoid) together with a prolonged exposure to exceptionally large doses of typhoid bacilli overwhelmed the defensive powers of the individual and allowed the infective agent to become dominant.

Case 9.—Miss E. G., aged 29, a nurse doing settlement work on the lower east side of the city, was immunized in June, 1913, and though frail of body worked very hard, nursing, among many others, several typhoid fever patients. In April, 1914, she again nursed several patients of typhoid fever, devoting herself with great energy to their care. April 30, 1914—nearly one year after immunization—she noted definitely the onset of malaise, headache and general pains. May 5 she entered the Post-Graduate Hospital with marked febrile symptoms. May 6 a Widal was negative, but a blood culture showed typhoid bacilli. May 11 the Widal was found positive in a dilution of 1:80 (no higher dilutions were attempted). In the meanwhile her temperature at the beginning of the second week showed the typical continuous elevation, varying only between 104 and 105 F. May 20 she died from intestinal hemorrhage.

Case 10.—Miss D., aged 23, a nurse at the Presbyterian Hospital, received three successive doses of antityphoid vaccine prepared at the hospital, July 1, 11 and 22, 1913, respectively. After nursing a particularly severe case she became ill April 27, 1914, with fever, headache, pains in the back and limbs, and sore throat—that is, nine months after immunization. She continued at her work for several days, despite the indisposition caused by the initial symptoms. On May 2 the Widal test was found suggestive in dilution of 1:20, and negative in dilution of 1:100. Again, May 7, the Widal was positive in a dilution of 1:20, and suggestive in 1:100. May 13, typhoid bacilli were found in the blood. Her temperature curve was an atypical one showing fluctuation in the second week between 98.8 and 103.5, reaching 105 at the end of the fourth week, and then continuing its large excursions. After a stormy period of eight weeks she recovered.

Again one turns to the record of Russell's experiences, and there one finds a telling and satisfying answer in quotations from his writings already given, where he says that "by all possible laboratory tests, the immunity conferred was identical with and equal to that remaining after typhoid fever."

To place the problem here presented in different words: If, notwithstanding an attack of typhoid fever, thoroughly authenticated by laboratory and clinical diagnostic tests, there still may follow a second attack of the disease at some later period, even though it is commonly taught and accepted that one attack confers immunity for life, then why should immunity obtained by vaccination be deprecated and tabooed if a like exceptional recurrence follow its practice? That vaccination gives immunity to great masses of those exposed, is most eloquently attested to by the vigorous and severe test it has received in our army and navy among more than 200,000 men. And this should outweigh overwhelmingly the criticism that an occasional exception has evoked. From the literature we shall first cite the reports of recurrences of typhoid fever, and then compare them with the reports of typhoid fever cases subsequent to vaccination, remembering that it is currently held that the latter confers immunity lasting from two to two and one-half years, according to Firth of England. Martha Wollstein, it may here be observed, is quoted as believing in revaccination after one year, though this is contrary to Firth's and Russells belief in a two or two and one-half years' immunity as noted in their extensive experiences in India and the United States, respectively.

1. Some reports of recurrences are as follows:

Dreschfield in over 2,000 cases at the Hamburg General Hospital reports that fourteen were affected twice, and one three times.

In 500 of Osler's cases in which special inquiry was made as to the history of a previous attack, eleven, or 2.2 per cent., were found in which it had occurred.

W. T. Cummins and P. K. Brown found that of 149 of their cases nine had relapses, one of them occurring four weeks after the patient left the hospital; one other patient developed a second attack after six years.

As to relapses, Strümpell reports that they occurred in 9 per cent. of all cases of typhoid fever at Leipsic; Murchison, 3 per cent.; Griesniger, 6 per cent., and Shattuck as high as 16 per cent. McCrae in 28,057 collected cases found 2,493 (8.8 per cent.); while in 172 of his own cases relapses occurred in 11.4 per cent. Why these relapses should occur is a question at once difficult and not in place here to consider, except to indicate that Durham's explanation of the evolution and unexpected dominance of a heretofore subordinate and quiescent strain or family of *Bacillus typhosus* is quoted with approval by McCrae.

2. Directing our attention to the occurrence of typhoid after a complete course of immunization, we find the following instances recorded in the literature:

Russell reported twenty-seven cases of typhoid occurring among the men of our army and navy, with one death, the result of intestinal hemorrhage. Of these twenty-seven cases of infection in vaccinated persons, four cases developed in less than one month after vaccination; eight cases developed within three months after vaccination; six cases developed within six months, and over three months after vaccination; six cases developed within twelve months, and over six months after vaccination; two cases developed within eighteen months, and over twelve months after vaccination; two cases developed within twenty-four months, and over eighteen months after vaccination; in three cases the interval was unknown.

Here again, the relatively long period elapsing between the time of vaccination and the appearance of infection would argue powerfully against the theory of a negative phase, if further argument were needed.

Hunt, as already mentioned in a different connection, among 761 who were vaccinated, found two in whom typhoid fever followed the third injection.

In the Massachusetts General Hospital, 1,361 were vaccinated, and but two cases of enteric fever developed (a morbidity of 0.15 per cent.) against eight cases in 674 non-immunized persons (a morbidity of 1.19 per cent.). At this institution, of the two cases that developed, both were in nurses, one of whom a year after inoculation cared for two patients outside the hospital, and developed a severe attack, but recovered. The other nurse was free two years after vaccination, but then became infected from typhoid material that accidentally entered her mouth.

Here, then, to summarize the results of this review of the literature, are facts obtained from two different angles, which, brought to a focus, show distinctly that whether it is by an attack of typhoid fever, or by the prophylactic injection of killed typhoid organisms, the immunity acquired by great masses of individuals can be safely depended on, in the one case for a protracted period or even a lifetime, in the other case for a period of from two to two and one-half years or even longer.

When it is seen that in those inoculated, a great decrease in morbidity and mortality as contrasted with uninoculated groups of a population results, then indeed is enthusiastic belief in its value justified. Experiences many times multiplied, like those of Wright at Ladysmith, confirm one's faith in its protective power. Of 1,705 persons whom he inoculated, only 2 per cent. contracted typhoid as against 14 per cent. among 10,529 uninoculated persons; and again elsewhere, where of 19,069 inoculated, 266 cases of typhoid (1 in 84.4 persons) developed with a mortality of 17 per cent., while among 150,231, 3,739 cases (1 in 40 persons) developed with a mortality of 25 per cent.

No better statement of the present day attitude on the subject of the possibility of obtaining absolute immunity through antityphoid prophylactic treatment could be given than is contained in a letter of Major Russell written from Vera Cruz to the Department of Health, Aug. 10, 1914, and received after this article had been written. We here take the liberty of inserting quotations from it:

> As you will note (in the article written in June, 1912, in the *American Journal of the Medical Sciences*), there was one fatality among the 27 cases, and that from hemorrhage.
>
> Twenty of the 27 cases occurred within one year of vaccination, probably because of the greater exposure of recruits to all kinds of infection than occurs among older soldiers. *It is evident that the vaccine cannot be expected to give absolute protection, even in the period immediately following it.* To be sure, it does protect in almost every instance, but the exceptions are frequent enough to prevent our claiming absolute protection. There is no perfectly satisfactory explanation of the occasional failure to protect. We know, of course, that clinical typhoid is not infrequently followed by relapse, and that the disease may occur twice in the same person. It may be due to an excessive dose of infectious material, as in milk epidemics, or among nurses, or to the apparent impossibility of obtaining a high degree of immunity in certain persons.
>
> I do not believe we are justified in promising absolute immunity even for a short period; we can state, however, that the chances of infection among vaccinated persons is extremely small and that when infection does occur, the prognosis is decidedly better than among the unvaccinated (1 death in 27 cases).
>
> We feel very confident that the vaccine protects against the average dose of infectious material, but we have always doubted its power to protect against excessive amounts. While it is true that the protection conferred is not absolute, that is no reason for not using it in dispensaries, hospitals and among contacts as much as possible.
>
> Not a single case of typhoid fever has occurred among the troops with whom I am serving, since they were first mobilized in Texas over two years ago; we are not exposed, however, to milk epidemics to any great extent, since the use of canned milk among troops, while in the field, is almost universal.

It is earnestly desired that all experiences of private physicians in this community, along the lines above indicated, be sent to the department that it may cooperate in their investigation and proper classification, with a view to correlating the mass of testimony to serve for future guidance.

The experiences of the New York Department of Health as here offered indicate that in a civic community no conclusive or valuable study, such as of prophylactic antityphoid injections, is possible, unless the Department of Health can serve as a clearing house to which the facts of isolated experiences of individual physicians are sent, and through which they pass as a well-ordered, logically arranged whole.

GENERAL CONCLUSIONS

1. The accurate observations recorded in hundreds of thousands of cases leave no doubt as to the preventive powers of antityphoid vaccination in all but a relatively insignificant few.

2. In those subsequently affected it strikingly decreases the morbidity and the mortality.

3. Severe reactions, if one makes observations from extensive studies (the only correct way), are rare.

4. To avoid severe reactions one must observe carefully several precautions, as follows:

(*a*) Never administer it to any but the healthy.

(*b*) To permit of slow absorption, avoid puncture of a vein, or intramuscular injection.

(*c*) Clean syringe and sterilize the area for injection, using tincture of iodin for the latter purpose.

(*d*) Children especially are to avoid exposure to the sun following treatment.

(*e*) Avoid administering it during the menses or pregnancy.

(*f*) Allow no hard work or indulgence in alcohol after the injection.

(*g*) Avoid reinjecting in indurated areas.

5. Severe reactions have never left permanent injury.

6. When the incubation period has begun, the time for antityphoid immunization has passed. The treatment is preventive of typhoid fever, and not a typhoid antitoxin.

7. Long exposure to overwhelming doses of typhoid bacilli (in those who are in close contact with cases and especially in epidemics), may nullify the immunizing powers of antityphoid vaccine, and an attack may therefore follow one or more injections.

8. Chronic illness (tuberculosis, etc.), as well as debility from other causes, and fatigue and exhaustion as well, predisposes to severe reactions.

9. Injections after intimate and long exposure hasten the onset.

10. For a period of at least two years, and possibly more, immunization is as effective in protecting from an attack of typhoid fever as is a previous attack of the disease itself.

11. Recurrences may follow after a complete immunizing course of treatment, in exceptional instances in which debility and fatigue exhaust the resistant and defensive powers of the body, and when exposure to massive doses of typhoid bacilli exists.

Thankful acknowledgment is made of suggestions and assistance received from Dr. John S. Billings, director of the Bureau of Infectious Diseases of the Department of Health.

1855 Seventh Avenue.

THE PATHOLOGY OF THE MISTAKEN DIAGNOSES IN A HOSPITAL FOR ADVANCED TUBERCULOSIS *

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"Progressive medicine recognizes that among the most helpful aids to the advancement of the work of our profession are the critical analysis of errors, either in diagnosis or treatment, the frank discussion of mistakes, and the unremitting investigation of the reasons why procedures in current practice fail."[1] The following confession and analysis of errors is made in this spirit, and further to add its iota of emphasis to the importance of the correlation of clinical and pathologic data. An important purpose of the necropsy is surely lost if it is not observed at least indirectly by the clinician that he may learn of his mistakes or strengthen his convictions.

In the 198 necropsies that have been performed at the Boston Consumptives' Hospital since its foundation, twenty-three cases, or 11.5 per cent., have proved to be non-tuberculous, in so far, at least, that there was no active lesion. The report is not to be construed in any sense as a criticism of the clinical staff of the hospital. It is thoroughly appreciated that under the conditions, in a number of the cases, the diagnosis of tuberculosis was the logical one, and further in their defense it might be stated that seven of the twenty-three cases they recognized ante mortem as being non-tuberculous and five others were under observation only one, two or three days, so that there was no opportunity for close study. They all had been diagnosed tuberculosis, however, by some physician at some time to account for their reference to this institution.

It is not to be supposed that this percentage of error extends to all the cases that have been treated in the hospital. It would be lowered by those cases of undoubted tuberculosis that have been discharged otherwise than dead and further, greater effort has been made to obtain permission for necropsy in those cases of special interest and obscurity, among which have been the majority of the non-tuberculous. It does mean, however, that a total of 1,365 hospital days have been usurped by these proved non-tuberculous from the needy tuberculous of the long waiting list that is always a feature of hospitals of this nature. This is a point of considerable economic importance, not so much to general hospitals as to the special institutions receiving sums of money for the specific purpose of attempting to care for the large group of tuberculous humanity.

These cases are not presented in great detail because of their number, but just those points from the clinical and pathologic protocols are given that are of correlative interest including the clinical diagnosis, color, sex and age. They are grouped and briefly discussed on the basis of the chief pathologic findings.

Case 1 (No. 1346).—White woman, aged 48. Clinical diagnosis, acute pericarditis; fibroid tuberculosis. In hospital but one day. Cough and expectoration intermittently for twelve years. Fever, palpitation and precordial distress on admission. Dulness over left apex; few fine, moist râles through left lung; sibilant on right. Heart enlarged to left; friction rub at apex; pulsus paradoxus. Sputum negative for tubercle bacilli.

Necropsy.—Acute fibrinous pericarditis (pneumococci and streptococci); late stage of a resolving pneumonia; dense contracted scar at left apex, 3 by 2.5 cm.; mucopus in bronchi; syphilis apparent from changes in aorta and liver and the presence of amyloid histologically.

Case 2 (No. 1862).—White woman aged 53. Clinical diagnosis, carcinoma and gangrene of lungs. Patient was in hospital but two days. Seven months before, a carcinomatous breast was removed. Cough began one week later. She raised large amounts of fetid, blood-streaked sputum that was negative for tubercle bacilli. There were several frank pulmonary hemorrhages. Dulness over upper portions of both lungs, and lower posterior of right. Numerous and various râles throughout both sides. In addition, there were signs of cavity in right axilla.

Necropsy.—Unresolved and organizing pneumonia; gangrene and abscesses of lungs; bronchopneumonia and encysted empyema at right base. No carcinoma or tuberculosis.

Case 3 (No. 1925).—White man, aged 38. Clinical diagnosis, pulmonary tuberculosis, revised to unresolved pneumonia. Sudden onset, two weeks before admission, with chills, cough and cyanosis. Signs of consolidation over greater portion of left lung. Pericardial friction rub. Sputum negative for tubercle bacilli.

Necropsy.—Lobar pneumonia; empyema (left chest); purulent pericarditis.

Case 4 (No. 2617).—White man, aged 22. Clinical diagnosis, pulmonary tuberculosis; empyema; gangrene of lung; lumbar abscess. For three months suffered loss of weight and strength; severe cough and abundant sputum, positive for tubercle bacilli on one examination. An empyema was drained surgically and abscesses developed in lumbar muscles and left groin. Dulness over both lungs, especially the right; râles.

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* From the Pathological Laboratory of the Boston Consumptives' Hospital, Mattapan, Mass.

[1] Deaths Following Anesthesia, editorial, The Journal A. M. A., April 4, 1914, p. 1098.

Necropsy.—Unresolved and organizing pneumonia; chronic empyema and secondary multiple abscesses; general amyloid.

Case 5 (No. 2838).—White man, aged 43. Clinical diagnosis, pulmonary tuberculosis, bronchiectasis; chronic interstitial nephritis. Patient was in hospital but two days. Cough for one month, gradually increasing in severity, at times raising quantities of sputum, occasionally fetid, in which one tubercle bacillus was found; afternoon temperature and increasing prostration. Both lungs were dull throughout and fine and medium moist râles were heard. A trace of albumin, coarse and fine granular casts in urine.

Necropsy.—Unresolved croupous pneumonia in both lungs, with areas of gangrene; ulcerative bronchitis; chronic interstitial and degenerative nephropathy.

Case 6 (No. 2914).—White man, aged 26. Clinical diagnosis, pulmonary tuberculosis; bronchopneumonia; empyema. Eight months before death, was admitted to a general hospital after having suffered a severe chill and pain in right side. From the cough, blood-streaked sputum, marked physical signs in the chest that later developed and the Roentgen ray, a diagnosis of "pneumohydrothorax" was made. A quantity of purulent fluid was drawn from the right chest. Patient was discharged, but later readmitted with same symptoms, the bloody sputum being a more prominent feature. Tubercle bacilli were found in sputum and he was transferred to this institution. While here, he had several frank hemorrhages, and one tubercle bacillus was found after extended search. Signs of consolidation and fluid were still present and the right chest was aspirated on several occasions.

Necropsy.—Chronic adhesive pleuritis of right lung, walling off a large pocket of pus. The lung was entirely denuded of pleura over this area, the parenchyma itself ulcerated, a number of small vessels exposed and rather free communication between empyema cavity and bronchi established. No evidence that this was a tuberculous process could be found either grossly or microscopically. The lung itself showed compression atelectasis. Confluent bronchopneumonia of left lung; early amyloid in spleen, liver and kidneys.

Case 7 (No. 3142).—White boy, aged 22 months. Clinical diagnosis, pulmonary tuberculosis; tuberculosis of bronchial glands. Definite history of pneumonia five months before death, followed by a progressive loss of weight and strength, dyspnea, and hectic temperature becoming more distinctly septic in type. Lungs: Dulness over entire left chest, bronchial breathing in lower half, fine and medium râles in both lungs. After numerous examinations a few tubercle bacilli were found.

Necropsy.—A large, chronic empyema in left chest, compressing lung into a small mass along vertebral bodies. Sinuses through the atelectatic lung drained this cavity into the large bronchi and no doubt transmitted the harsh bronchial breath sounds heard during life. Microscopically, there were found a few young miliary tubercles in the compressed lung, but none in the cavity wall or elsewhere. The right was the seat of extensive hemorrhagic infarction, the emboli arising from a mural thrombus in right auricle that extended through the tricuspid orifice.

Case 8 (No. 3179).—White man, aged 45. Clinical diagnosis, pulmonary tuberculosis (?); abscess of right lung. In hospital but two days. Sudden onset three months before death with chill. Patient developed a severe cough with expectoration. The sputum was fetid for last two months; patient did not stop working, however, till one month later. Three weeks before death, patient developed a severe pain in right side accompanied by marked dyspnea which persisted. Signs of consolidation over entire right lung, posteriorly over left. Sputum negative for tubercle bacilli.

Necropsy.—Gangrenous, non-tuberculous cavity involving practically entire upper lobe of right lung. The cavity was practically filled with masses and strands of necrotic tissue, plugs of which occluded the bronchi, masking the usual signs elicited over a cavity. Middle and lower lobes solid with late gray hepatization, showing small foci of abscess formation and gangrene. Left lung seat of hypostatic pneumonia and edema. Heart dilated.

In this group of cases, one of delayed resolution, three of gangrene and abscess, and three of empyema, all of them the complications of pneumonia, the diagnosis is particularly difficult. The physical signs are so confusing and the subjective symptoms are usually so strikingly like those of advanced tuberculosis that a differentiation in every case seems rather hopeless. Yet this is the very type of the whole series that promises the most favorable result to the proper treatment, particularly in the light of the advances made in chest surgery. To make the diagnosis still more difficult, the onset of the underlying pneumonia is often very obscure, as in Cases 1, 2, 4 and 5. The patient may even continue with his work during the sthenic stage of the infection with the impression that he suffers merely from a "cold," and not give up till the effects of an empyema, abscess, gangrene or some other complication debilitates him. This emphasizes the importance of a close scrutiny of the previous history and suggests that a number of cases of uncomplicated pneumonia must come and go without being recognized.

Case 9 (No. 684).—White man, aged 63. Clinical diagnosis, pulmonary tuberculosis; tuberculous meningitis. Loss of weight and strength for several years; cough with scanty sputum, negative for tubercle bacilli. Dulness over right lung; râles not constant and varying from fine moist to coarse. Dyspnea toward the end and on last day rigidity of neck and Kernig's sign.

Necropsy.—Chronic interstitial nephropathy; chronic myocarditis; general arteriosclerosis; edema and congestion of lungs; moderate chronic bronchitis; cerebral anemia and edema. There was no anatomic explanation for the dulness in right chest.

Case 10 (No. 874).—Man, negro, aged 60. Clinical diagnosis, pulmonary tuberculosis; moderate emphysema; old pleurisy and effusion at left base. Loss of weight and strength, dyspnea and cough for a year. Considerable sputum during final month, positive for tubercle bacilli. Marked dulness over both lungs and numerous coarse râles; cardiac murmurs.

Necropsy.—Chronic fibrous obliterative pericarditis; aneurysm of aorta; left chest, chronic pleurisy, hydrothorax and compression atelectasis; general chronic passive congestion; terminal bronchopneumonia.

Case 11 (No. 938).—White man, aged 56. Clinical diagnosis, pulmonary tuberculosis; pneumothorax; aortic regurgitation; tabes dorsalis. Lost 25 pounds the summer before death. Cough for six months with copious sputum, negative for tubercle bacilli. Dulness over both apices and right base; râles throughout both lungs; subcutaneous emphysema of neck. Death followed a 2-liter pulmonary hemorrhage.

Necropsy.—Large aortic aneurysm that had eroded and ruptured into left primary bronchus. The tabetic symptoms were the result of erosion of vertebrae and pressure on the cord.

Case 12 (No. 1241).—White woman, aged 41. Clinical diagnosis, carcinoma uteri; mitral stenosis and regurgitation; cardiac dilatation. "Pleurisy" one year before death. Loss of weight and strength; intermittent, hacking cough with some expectoration, negative for tubercle bacilli. Lungs practically free; heart enlarged and presented murmurs; uterus irregularly enlarged; acrid vaginal discharge.

Necropsy.—Mitral stenosis and regurgitation; cardiac hypertrophy and dilatation; pleural and peritoneal transudate; uterine fibroids (no cancer).

Case 13 (No. 1461).—White woman, aged 29. Clinical diagnosis, pulmonary tuberculosis; chronic nephritis; mitral stenosis. Pregnant. Cough for five months; moderate amounts of sputum, at times blood-tinged, which was positive for tubercle bacilli. Three months before death was in another institution for tuberculosis. Slight dulness at left apex of lungs; moderate dulness at both bases with a few moist râles after coughing. Presystolic murmur at apex. Patient died after a cesarean section performed on account of persistent headache and vomiting and suppression of urine. Latter contained albumin and casts.

Necropsy.—"Button-hole" mitral valve; pleural effusion with moderate compression atelectasis; chronic passive congestion of lungs and bronchi, mucosa of which was blood-stained; marked glomerular nephropathy. One fibrosed, non-active miliary tubercle was found histologically.

Case 14 (No. 2046).—White woman, aged 58. Clinical diagnosis, chronic pleurisy; mitral and tricuspid regurgitation. "Pleurisy" of four years' standing; slight cough and scanty expectoration since pneumonia one year before death; palpitation and dyspnea more recently. Moderate dulness at left apex of lungs; harsh breathing and leathery squeaks through both sides. Heart enlarged to left, thrill and murmurs over entire area. Sputum negative.

Necropsy.—Right lung presents general, thin, fibrous pleural adhesions; congestion and edema of both. Marked hypertrophy of heart; chronic obliterative pericarditis; "button-hole" mitral; enormous thrombosis of left auricle.

Case 15 (No. 3009).—White woman, aged 72. Clinical diagnosis, pulmonary tuberculosis; pleurisy with effusion; mitral regurgitation. History of pneumonia and pleurisy ten years before death; "bronchitis" eight years later; cough persistent for last year with some sputum, positive for tubercle bacilli. Palpitation and dyspnea on exertion; only occasional rises in temperature. Dulness at both apices and left base of lungs, distant breath sounds over latter. Heart enlarged; systolic murmur at apex. Edema of extremities. Albuminuria.

Necropsy.—Lungs: Chronic circumscribed empyema on right side, pleural effusion on left; compression atelectasis of both lungs; multiple hemorrhagic infarcts of both lungs from emboli from a mural thrombus in right auricle. Hypertrophy and dilatation of heart; very marked focal and diffuse fibrous myocarditis. General arteriosclerosis, passive congestion and senile changes.

This second group is made up of two cases of aortic aneurysm, four of chronic cardiac lesions and one of cardiorenal disease. The patients were all, with the exception of Cases 12 and 13, well past 50 years of age, gave the history of loss of weight and strength, cough and more or less expectoration. Objectively, the confusing factors were the râles, present in all the cases, and signs of fluid in Cases 10, 13 and 15. Well-marked pulmonary congestion and edema and pleural transudate were invariably found to explain the physical signs. Cough in persons past 50 years of age is not unusual and was a prominent feature in several of these cases because of the chronic passive congestion of the bronchial mucosa.

Case 16 (No. 3419).—White man, aged 65. Clinical diagnosis, pulmonary tuberculosis; arteriosclerosis. Alcoholic and specific history. Severe trauma to left chest three years before death. During the last year suffered from pleurisy, and several pints of fluid were aspirated at various times. Loss of weight and strength and cough for two years. Lungs: Flatness over right chest with diminished breath sounds at base; dulness over left lung, bronchial breathing, râles. No fever at any time; sputum negative for tubercle bacilli.

Necropsy.—Malignant leiomyoma (probably primary in prostate) with nodular metastases to left lung, mediastinum, liver, pancreas, suprarenal, skin, etc. Chronic empyema and compression atelectasis on right side. Histologically, there were small foci of caseation in lungs and suprarenal, but no active process.

Case 17 (No. 3071).—White man, aged 57. Clinical diagnosis, pulmonary tuberculosis; laryngeal tuberculosis; chronic alcoholism; exhaustion psychosis. Marked alcoholic history. "Pleurisy" three years before death. Cough and expectoration for last six months; night sweats, dyspnea, hoarseness of sudden onset, pain on swallowing, loss of weight and strength, but no fever. The throat symptoms became the prominent subjective feature. Dulness and bronchial breathing at both apices of the lungs. Tubercle bacilli were found in the sputum. Patient's mental condition required his transfer to the Boston State Hospital, where he shortly died, and to whom we are indebted for the necropsy report.

Necropsy.—Carcinoma of larynx with metastasis to lung, liver, stomach and pancreas. No tuberculosis was found.

Case 18 (No. 2979).—White man, aged 37. Clinical diagnosis, pulmonary tuberculosis; chronic hypertrophic osteo-arthropathy. Beginning with "neuritis" eight years before death, he three years later developed pain, swelling and tenderness of ankles; later involving the other joints of extremities. Irregular thickenings and definite exostoses developed still later, particularly at epiphyses of long bones. A striking feature also was the enormous clubbing of the fingers and toes that subsided considerably in the later months. Three months before death, *signs of consolidation appeared in upper portion of right lung.* There was practically no cough or sputum and no tubercle bacilli were found.

Necropsy.—Chronic hypertrophic osteo-arthropathy; primary carcinoma of right lung with metastasis to brain, periosteum, kidneys, etc.

Case 19 (No. 2734).—Man, negro, aged 59. Clinical diagnosis, pulmonary tuberculosis; right pleural effusion; carcinoma of liver. For three months suffered with pain in the right side and dyspnea on exertion; loss of weight and strength; practically no cough or expectoration; no tubercle bacilli found. Considerable serous fluid aspirated from right chest. *Dulness over entire right lung* and apex of left; few râles after coughing. Definite tumor in epigastrium.

Necropsy.—Right-sided hydrothorax with compression atelectasis of lung; primary carcinoma of liver with metastasis to pancreas, diaphragm, right pleura and mediastinal glands.

Case 20 (No. 2768).—White woman, aged 55. Clinical diagnosis, pulmonary tuberculosis; carcinoma of cervix and vagina; vesicovaginal fistulas; chronic cystitis. Cough for five years; loss of weight and strength. Dulness over upper lobes of both lungs, few fine râles on coughing; signs of cavity in left lower lobe posteriorly. The carcinoma diagnosed by uterine curettings. *Sputum negative* for tubercle bacilli.

Necropsy.—Emphysema of lungs; moderate chronic bronchitis. In left lower lobe posteriorly, corresponding to location of cavity elicited clinically, was a mass of scar tissue 1.5 cm. deep by 2 cm. in diameter, firmly adherent to chest wall. In this mass the bronchi were considerably distended. There was a hard, ulcerating carcinoma of cervix and vagina; two vesicovaginal fistulas; chronic cystitis and ascending pyelonephritis.

In this group are five cases of malignant disease, in Case 18 primary in lung, in Cases 16, 17 and 19 metastatic in lung, and in Case 20 the lungs were not involved in the tumor process. As in the previous group, progressive loss of weight and strength were prominent features of the clinical history. Very definite physical signs were elicited over the chest, of course, in all the cases except the last because of the lung and pleural involvement with tumor.

Case 21 (No. 1546).—White man, aged 71. Clinical diagnosis, chronic cystitis; aortic regurgitation; emphysema; acute appendicitis.

The cystitis was of long standing, following prostatectomy and repeated, careless self-catheterization. Loss of 50 pounds in weight during last two and a half years; cough, with scanty, yellow sputum for last one and a half years, negative for tubercle bacilli. Slight dulness at apices of both lungs; a few râles.

Necropsy.—Chronic bronchitis; hypostatic congestion of lungs; aortic stenosis; chronic cystitis with ascending pyelonephritis; ruptured appendiceal abscess. The loss of weight, cough and expectoration, while in this case the result of the chronic intoxication and heart lesions, *meant only one thing* to the outside physician—tuberculosis.

Case 22 (No. 1591).—White man, aged 40. Clinical diagnosis, pyelonephritis; decubitus; general septicemia. For over two months there had been a loss of weight and strength following typhoid pneumonia. There were no subjective symptoms suggesting tuberculosis and, objectively, merely a few fine moist râles at both bases. The sputum was negative.

Necropsy.—Aside from calcified nodules at the left apex, the changes found were those the result of the toxemia from the pyelonephritis.

Case 23 (No. 1322).—White woman, aged 26. Clinical diagnosis, purulent bronchitis and septicemia (streptococcic); *chronic peritonitis (postpuerperal). Of six months' duration,* with severe pain in left chest; night sweats; loss of weight and strength. Signs of consolidation at left base. Cough and copious sputum negative for tubercle bacilli, but containing many "streptococci." Blood-culture sterile; leukocytes 25,000.

Necropsy.—Actinomycosis of lung, liver and spleen. There was no history of contagion, and the subjective and objective symptoms could easily justify a diagnosis of tuberculosis. The error was a pathologic one, in failing to recognize the organism in the sputum.

It will be noticed that there is a rather significant grouping of these cases pathologically, that twenty of the twenty-three cases fall under three heads: (1) the sequelae of pneumonia, that is, delayed resolution, abscess, gangrene and especially empyema; (2) cardiorenal disease including aortic aneurysm, and (3) malignant tumors, not necessarily of lungs (Table 1).

Because these cases do not form a heterogeneous collection of conditions but are so definitely grouped, it seems that there are lessons to be learned from them and that greater precision in diagnosis is a possibility.

TABLE 1.—CORRELATION OF ANATOMIC DIAGNOSES

	No.	Percentage of Non-Tuberculous	Percentage of Total
Pneumonic sequelae	8	34.5	4
Chronic cardiorenal	5	30.5	3.5
Aneurysm of aorta	2		
Malignancy	5	21.5	2.5
Septicemia	2	13.5	1.5
Actinomycosis	1		
		100	11.5

A very *disconcerting factor with us in this* series of cases has been the number of positive sputa reported. In eight of the cases have tubercle bacilli been found, and the diagnosis of tuberculosis has been made on this basis largely in spite of any doubt that had previously existed as to the true nature of the case. It is safe to say that lesions of sufficient size to discharge bacilli into the sputum were not overlooked. In two of them lesions were found microscopically, but to account for the presence of bacilli in the other six we must assume either a contamination of the patients' mouths or the bottles or a confusion of the specimens and names, a possibility among a large group of patients from whom a number of specimens are being collected. In cases in which the diagnosis is at all doubtful, therefore, a number of sputum examinations should be made, in institutions especially, rather than placing entire confidence in one positive finding.

With the idea of determining whether or not this institution was unique in its high percentage of mistaken diagnoses, and further to see if the distribution of these cases was accidental, letters were sent to a number of institutions caring for the advanced tuberculous asking for their (1) total number of necropsies on those clinically diagnosed tuberculosis; (2) number of these non-tuberculous, and (3) pathologic diagnoses in the latter cases. Eight institutions[1] were good enough to supply these data, which are presented in Table 2.

TABLE 2.—DATA FROM OTHER INSTITUTIONS

Institution Number	Total No. Necropsies	Non-Tuberculous	Percentage Non-Tuberculous
1	13	2	15.5
2	64	2	3.0
3	92	11	12.0
4	12	1	8.3
5	45	5	11.0
6	100	14	14.0
7	12	3	25.0
8	15	0	....
Totals	353	38	10.8

Of the 353 necropsies heard from, thirty-eight, or 10.8 per cent., were non-tuberculous. The experience, therefore, is not a local one. The distribution is not the same as our own cases, however, for the sequelae of pneumonia do not seem to have been a very prominent disconcerting factor, whereas the cardiorenal diseases have given the most trouble in the experience of these other institutions.

TABLE 3.—CORRELATION OF ANATOMIC DIAGNOSES IN THE NON-TUBERCULOUS NECROPSIES OF OTHER INSTITUTIONS

Anatomic Diagnosis	No.	Percentage of Non-Tuberculous Necropsies	Percentage of Total Necropsies
Pneumonic sequelae	3	8.0	0.8
Cardiorenal	22	58.5	6.2
Aortic aneurysm	4	10.5	1.1
Malignancy	2	5.0	0.6
Septicemia	2	5.0	0.6
Syphilis	4	10.5	1.1
Pellagra	1	2.5	0.3

It may seem radical to be sounding a warning against diagnosing tuberculosis, but it must be remembered that we are dealing here with types of cases that are confused with those in the advanced stages of tuberculosis in which it is very unlikely to be overlooked, and that we are not considering the early stages of the disease, in which the tendency is to err in the other direction, that is, fail to recognize the presence of the infection.

The responsibility of institutions of this character does not end in providing a comfortable terminus for the advanced tuberculous, or in segregating from the public these sources of infection, but it includes also a careful scrutiny of its admissions and careful routine in the consideration of the ones admitted, with the possibility of ultimate cure or relief always in mind. This involves, of course, a correct diagnosis. While erring in this direction is more desirable than sending patients with advanced tuberculosis to a general hospital, yet in justice to all patients everything should be done to bring about their proper distribution. A certain percentage of mistakes is unavoidable, but it does seem, from a pathologist's perverted point of view at least, that this should be lower than the experiences recorded above.

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[1] The cooperation of the following institutions is gratefully acknowledged: State Infirmary, Tewksbury, Mass., John H. Nichols, M.D., superintendent; Providence City Hospital, D. L. Richardson, M.D., superintendent; the Philadelphia General Hospital, Henry Sykes, M.D., late chief resident physician; Montefiori Home, New York, Dr. Wachsmann,, medical director; Kings Park State Hospital, L. I., William Austin Macy, M.D., superintendent; Tuberculosis Hospital for the District of Columbia, W. D. Tewksbury, M.D., superintendent; J. J. Kinyoun, M.D., pathologist; White Haven Sanatorium, Pennsylvania, Alexander Armstrong, M.D., chief physician; the Tuberculosis League Hospital, Pittsburgh, W. C. White, M.D., superintendent.

It is well to bear in mind that (1) a patient showing progressive loss of weight and strength, with cough, expectoration and even hemoptysis and abnormal physical signs in the chest, is not necessarily in a hopelessly advanced stage of tuberculosis, but occasionally still amenable to treatment directed to the *real* cause of the symptom complex; (2) particular attention should be paid to excluding cardiorenal conditions and pneumonia with its sequelae, and (3) one sputum examination, either positive or negative, should not be depended on to establish a diagnosis.

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CONTRIBUTIONS TO THE PHYSIOLOGY OF THE STOMACH

XXI. THE SUPPOSED ACTION OF THE BITTER TONICS ON THE SECRETION OF GASTRIC JUICE IN MAN AND DOG *

A. J. CARLSON,

Assisted in part of the Experiments on Dogs, by
Miss Bertha Torchiani and Mr. R. Hallock

CHICAGO

We have shown (for man and dog) that the so-called stomachics or bitter tonics acting in the stomach alone have no appreciable influence on the hunger mechanism when given in the usual therapeutic quantities.[1] If the stomachics are taken by mouth in the ordinary way, all of them inhibit gastric tonus and hunger contractions in direct proportion to the intensity and duration of stimulation of the nerve endings in the mouth. If the bitters are introduced directly into the stomach in quantities considerably in excess of the therapeutic dose they all cause inhibition of the gastric tonus and hunger mechanism, evidently by stimulation of nerve endings in the gastric mucosa. In brief, the bitter tonics, in so far as they influence the hunger mechanism directly, cause inhibition or depression of hunger. According to Heubner and Reider,[2] large doses of bitters also retard the emptying of the stomach (dog). This must be due to a direct depression of the gastric movements of digestion, or to a retardation of the digestion process itself.

The present series of experiments deal with the question whether these tonics are capable of influencing the secretion of gastric juice, and in that way act favorably on gastric digestion. The literature on this subject is both considerable and conflicting. It seems pretty well established that the bitters have no action on the pepsin-hydrochloric acid digestion itself, except possibly in way of slight retardation.[3] This slight retarding action is of no practical significance, especially when the bitters are taken twenty or thirty minutes before the meal, or even just before the meal, because of the great dilution with gastric juice, saliva and the fluids of the food. The literature also points to the conclusion that by themselves the bitter tonics are incapable of causing secretion of gastric juice either by acting in the mouth or in the stomach. Pawlow[4] noted in dogs that the bitters acting in the mouth cause a copious flow of saliva, but leave the gastric gland perfectly quiescent; and not even when introduced into the stomach do they cause secretion of gastric juice.

Some observers (Reichmann,[5] Scheffer[6] and others) have reported that as long as the bitters remain in the stomach they depress or diminish the secretion of gastric juice, and this led to giving the bitters from ten to thirty minutes before the meals.

Do the bitter tonics augment the secretion of gastric juice indirectly by increasing the excitability of the nerve endings of taste in the mouth, and possibly the nerves of appetite sense in the stomach? This is the view emphasized by Pawlow,[7] but he does not adduce any experiments in its support. The work of Borissow[8] seems to confirm it, however. Borissow reports twelve sham feeding tests on one dog with gastric fistula and esophagotomy. Six of these tests were made after giving the dog tincture of gentian in the mouth. In both series of tests the sham feeding was continued for one minute and the gastric juice collected for two hours following the sham meal. In the case of the gentian series the sham feeding was instituted as soon as the profuse salivation induced by the bitters had ceased. Borissow obtained the results recorded in Table 1.

TABLE 1.—SHAM FEEDING TESTS OF BORISSOW

Series	Minimum c.c.	Maximum c.c.	Average c.c.
Normal or no tonic	59.3	126.5	101
Tincture of gentian	85.1	185.2	130

There was no difference in the acidity and the pepsin concentration of the gastric juice of the two series, but the average excess of gastric juice in the gentian series is striking. However, it may be questioned whether a short series of tests on one animal can be held as conclusive, especially in view of the great individual variations (over 100 per cent.) within each series.

EXPERIMENTAL PROCEDURE ON MAN

It will be recalled that Mr. V.,[9] our man with permanent gastric fistula, has the esophagus completely constricted at the level of the upper end of the sternum, so that nothing can be swallowed from the mouth and reach the stomach via the esophagus. Above the constriction the esophagus is somewhat dilated so as to hold about half a glass of liquid. These conditions serve admirably for studying the influence of the bitters on the secretion of gastric juice.

On all test days 100 c.c. of water were put into the stomach 120 and sixty minutes before the meal, so as to insure a completely empty stomach. The tonics were introduced into the stomach via the fistula between fifteen and thirty minutes before the meal time. In the series of tests with the tonics in the mouth, these were put into the mouth and swallowed into the esophageal pouch ten minutes before the meal. They usually had to be expectorated before the meal actually began, because of the salivation induced by them.

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* From the Hull Physiological Laboratory of the University of Chicago.

[1] Carlson: Jour. Pharmacol. and Exper. Therap., 1914, vi, 209.

[2] Heubner and Reider: Therap. Monatschr., 1909, xxiii, 310.

[3] Wolf: Ztschr. f. klin. Med., 1889, xvi, 243.

[4] Pawlow: The Work of the Digestive Glands, London, 1902, pp. 70, 138.

[5] Reichmann: Ztschr. f. klin. Med., 1888, xiv, 177.

[6] Scheffer: Jour. de méd. de Paris, 1910, xxii, 419.

[7] Pawlow: The Work of the Digestive Glands, London, 1902.

[8] Borissow: Arch. f. exper. Path. and Pharmacol., 1904, li, 363.

[9] Carlson: Am. Jour. Physiol., 1912, xxxi, 151.

In all three series of tests the gastric juice was collected during the first twenty minutes Mr. V. was chewing his food in the usual way preparatory to putting it into the stomach by means of a syringe. We are therefore dealing with the *appetite gastric secretion only*.

The stomach was invariably emptied just before Mr. V. started to eat, and record kept of the quantity, acidity and pepsin strength of this juice found in the empty stomach, as it was thought that the quantity and quality of this juice might serve to indicate the physiologic condition of the gastric glands, irrespective of the condition of the appetite.

The experiments were made during the months April to November, 1914. The tests with the tonics were interspersed with controls without the tonics all the way, so as to eliminate as far as possible the errors from variations in nutrition, appetite, etc., associated with variations in climate and in bodily activity.

It was aimed to make these tests a mere incident in Mr. V.'s daily routine. For that reason no special dietary standard was fixed. The ingredients of the noonday meal Mr. V. selected for himself at a nearby cafeteria. He naturally selected what appeared to him most palatable from day to day. The evening meal was taken in the same boarding house throughout the experimental period. Mr. V. states that the boarding house meals are very much the same from week to week, and less palatable than the noonday meal.

The tonics used (in therapeutic doses) were tinctures of gentian, quassia, calumba, humulus and condurango, and elixir of quinin, strychnin and iron. Most of the tests were made with the gentian tincture and with the elixir.

In order to exclude all possible psychic factors, Mr. V. was not told of the purpose of the experiments. He went about his daily work, taking his usual food at the usual time, while now and then a tonic was given and the appetitie secretion measured. I think it may be safely concluded that such psychic factors as faith in the potency of or hope of improvement from the drugs were entirely eliminated. Nor was the taking of any of these tonics by the mouth disagreeable or loathsome, so as to induce psychic depression.

RESULTS ON MAN

Fifty tests were made with bitters in the mouth and thirty-five with bitters in the stomach, with fifty-one control tests. These are summarized in Tables 2 and 3. The lunch and supper series are tabulated separately, because the appetite gastric secretion was uniformly less at the evening meal. This is probably due to less palatable food at the evening meal (absence of variety in the food, inferior cooking).

Examination of Tables 2 and 3 shows that the bitter tonics acting either in the stomach or in the mouth are practically without influence on the quantity of the appetite psychic secretion. There is a suggestion of an increased secretion with the bitters in the mouth for the noon meal series, but this is counterbalanced by a slightly lower figure for the evening meal. Table 3 indicates that the average physiologic condition of the gastric glands is practically the same in all the series.

As Mr. V. is a young man in good health, the question naturally arises whether the sensory nerves for the appetite sense (in mouth and stomach) are not normally in a state of maximum excitability, so that no further increase in excitability by bitter tonics is possible. This objection seems to be met by the lower secretion at the evening meal. Here is a condition in which *less palatable food should have been rendered more palatable by contrast with the bitter tonic*, or by actual increase in the excitability of the gustatory nerves. The results indicate no improvement by contrast. If the bitters in the mouth augmented the excitability of the taste nerves at the evening meal, this evidently caused an already unpalatable food to taste still more unpalatable, and hence the diminished appetite secretion.

These bitters in mouth or stomach produced no change in the acidity and in the pepsin concentration of the appetite gastric juice.

TABLE 2.—GASTRIC JUICE SECRETED BY MR. V. DURING THE FIRST TWENTY MINUTES OF CHEWING FOOD

Meal	Tonics	No. of Experiments	Gastric Juice in c.c. Lowest	Highest	Average
Lunch, 12-1 p. m.	No tonics	31	35	95	58.0
	Tonics in mouth..	30	30	93	61.0
	Tonics in stomach	20	40	85	58.2
Supper, 6-7 p. m.	No tonics	20	20	50	36.0
	Tonics in mouth..	20	20	48	33.0
	Tonics in stomach	15	18	47	30.1

TABLE 3.—GASTRIC JUICE IN EMPTY STOMACH OF MR. V. BEFORE EATING, IN THE EXPERIMENTS OF TABLE 1.

Meal	Normal, No Tonics	Tonics in Mouth	Tonics in Stomach
Lunch	18.3	18.4	19.2
Supper	16.6	15.0	17.2

EXPERIMENTAL PROCEDURE ON DOGS

The work was done on five dogs provided with an accessory stomach pouch according to the Heidenhain-Pawlow method. Care was taken to interfere as little as possible with the distribution of the vagi to the stomach pouch.

The tonics were introduced into the main stomach by means of a stomach-tube so as not to come in contact with the nerve endings in the mouth or esophagus. They were introduced into the stomach pouch directly with a pipet. When introduced into the mouth the bitters were soaked up in a small wad of cotton and the dog was compelled to chew on this for one minute. The tests were made twenty-four hours after the previous meal, and each dog was fed a fixed quantity of boiled lean meat. The gastric juice was collected for two hours after the beginning of the feeding.

The tonics were put into the main and accessory stomachs from twenty to thirty minutes before feeding, and into the mouth ten minutes before feeding. The size of the dogs varied from 5 to 8 kg. The quantity of tonics put into the stomach varied from 1.5 to 2 c.c.

The following bitters were used: tincture of gentian quassia and condurango and elixir of iron, quinin and strychnin.

RESULTS ON DOGS

Our results on the five dogs are summarized in Table 4. The data in this table permit only one conclusion, namely, that *these bitters acting in the mouth or in the stomach have no effect on the secretion of gastric juice in the dog*. The slight increase that appears in the case of Dog 5 would probably have been counterbalanced if a larger series of tests had been made. The tonics did not produce any changes in the acidity and pepsin concentration.

TABLE 4.—RESULTS ON DOGS*

Dog	Tonics	No. of Experiments	Gastric Juice in c.c. Lowest	Gastric Juice in c.c. Highest	Gastric Juice in c.c. Average
Dog 1	No tonics	17	10	33	19.0
	Tonics in mouth	15	13	29	18.4
	Tonics in main stomach	15	10	26	18.6
Dog 2	No tonics	17	3	9	5.1
	Tonics in mouth	10	3	8	4.9
	Tonics in main stomach	10	2	7	4.8
Dog 3	No tonics	15	4	10	7.0
	Tonics in mouth	10	5	10	7.2
	Tonics in main stomach	10	3	8	6.8
Dog 4	No tonics	6	6	9	8.4
	Tonics in main stomach	6	5	11	8.0
Dog 5	No tonics	10	8	16	12.2
	Tonics in main stomach	9	7	17	14.0
	Tonics in small stomach	8	7	16	14.1

* Dogs with accessory stomachs prepared according to the Heidenhain-Pawlow method. Record of the secretion of gastric juice for the first two hours following a standard meal of lean meat. The variation in the average quantity of gastric juice secreted by the different dogs is due mainly to difference in size of the accessory stomachs.

COMMENT ON THE RESULTS

The possible value of these and other stomachics, especially in digestive disorders, might be investigated by other methods, such as the determination of the actual quantity of food consumed, the time required for completion of gastric digestion, etc., with and without the tonics. And the final verdict cannot be given until all possible tests have been applied. But as regards any favorable action of these stomachics on the gastric secretory mechanism in man and dog, our results go to show that it is nil, at least when all purely psychic factors are eliminated.

The use of bitters as medicine goes back so far that there is no authentic record of its beginning, and the number of different kinds of bitters advocated from time to time as useful is a large one. They are of so varied chemical composition that the only thing they have in common is the bitter taste. Of course, in this discussion, we do not include such substances as quinin or strychnin, or the bitters with alcohol as the main constituent, as these substances have distinct physiologic actions not directly related to appetite, after absorption into the blood.

The bitter tonics are still common "home remedies" and favorite "drug-counter prescriptions." They are often prescribed as a matter of routine and sometimes ordered because the physician actually believes they produce good results. Is this belief well founded? These tonics are given to convalescents who would continue to improve, tonic or no tonic, and the tonic, not the recuperative power of the patient, gets the credit. For many ailments the physician prescribes a more hygienic living and a tonic. The patient's health improves and both physician and patient think the tonic did it.

But even if the bitters have no direct action on gastric secretion and digestion, and no appreciable indirect action on the secretion of gastric juice, may they not be valuable aids in expelling worry and in implanting hope and good cheer in the mind of the patient? May they not be an efficient handmaid to psychotherapy? According to Cushny[10] that is their main, if not their only value. There is no question that the bitter tonics connect up with the popular belief that the potency of a medicine is directly related to its strong (or bad) taste. And the readiness with which these tonics are dispensed by the physician nourishes the popular superstition that there is, or must be, a specific drug remedy for every ailment, a superstition that constitutes the open sesame of the medical quack and the patent medicine vender.

The stimulation of certain nerve endings in the mouth and in the normal gastric mucosa unquestionably contributes to the complex sensation of appetite,[11] and these nerves are stimulated by condiments and flavors of food. Apart from this, the physiologic way of augmenting hunger and appetite is moderation in the food intake or increasing the utilization of the food in the body by work and cold.[12] If these measures do not improve appetite and hunger, the chances are that the digestive tract is not in a condition to take care of the amount of food demanded by the stronger hunger and appetite sensations.

To be sure, in therapeutic doses these tonics may be harmless, except in so far as their use contributes to the drug habit in emphasizing the "take something" instead of the "do something."

THE ETIOLOGY AND PATHOLOGY OF BONE AND JOINT TUBERCULOSIS *

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My first duty is the pleasant one of thanking you for your kindness in asking me to read this paper. I very much appreciate the honor you have shown me.

I have chosen "The Etiology and Pathology of Bone and Joint Tuberculosis" as the subject of my paper, because in Edinburgh we have lately been doing some work in this connection which may interest you.

It will aid later in understanding if I explain now that my remarks may be summarized under two headings: etiology and pathology.

ETIOLOGY

The essential etiologic factor is, of course, the lodgment of the tubercle bacillus; but this primary factor is intimately related with two secondary considerations which are of great importance; and these two considerations are: (1) the type of bacillus which causes the disease, and (2) the route by which the organism reaches the site of its development.

1. *The Type of Bacillus.*—It is universally agreed that by certain peculiarities various subclasses or species of tubercle bacilli may be recognized. There are the important divisions of the typus humanus and the typus bovinus, and pathologically the less important avian and piscine varieties.

From the point of view of pathology, and more especially from the clinical aspect, the human and bovine types of tubercle bacilli are those which more closely claim one's attention. Why should there be such anxiety to find out the relative part played by the human and bovine bacilli? The reason is obvious. The routes by which the bovine bacillus attacks the human body may be limited to a single one, namely, the alimentary tract. The alimentary tract is infected by the ingestion of bovine tubercle bacilli in milk; and therefore, after an attempt at a logical sequence, it is the question of milk infection which is at the bottom of all this seeking after knowledge with regard to the type of bacillus in bone and joint tuberculosis.

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[10] Cushny: Textbook of Pharmacology, 1910, p. 55.

[11] Carlson and Braafladt: Am. Jour. Physiol., 1915, xxxvi.

[12] Carlson: Am. Jour. Physiol., 1914, xxxiv, 155. Luckhardt and Carlson: Ibid., xxxvi, 37.

* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

This paper would be incomplete if I did not touch on the methods by which it is possible to differentiate between human and bovine bacilli. There are five possible tests recognized.

A. The rapidity of growth on mediums. Tubercle bacilli may be grown on various mediums, and one of the most suitable is inspissated egg (Dorset's medium). If comparison cultures are made of human and bovine organisms, it will be found that at the end of a common period the human bacillus will have grown more luxuriantly and more profusely than the bovine. This, however, cannot be considered by any means an absolute test; there is a large border line on which the organism grows neither profusely nor scantily.

B. The second possible test is based on another peculiarity in growth. It has been found that glycerin exerts a depressing effect on the growth of the bovine bacillus while it tends to stimulate the development of the human bacillus. Accordingly a medium is made consisting of egg and glycerin, and on it the doubtful bacillus is grown.

A profuse growth means a human bacillus; the organism which grows scantily, perhaps not at all, is bovine. Once again, one must confess, the test is by no means an absolute one for the same reason as before—a group which is on the border line.

C. At one time it was thought that there were great possibilities in distinguishing between groups of tubercle bacilli by their morphologic characters. Long bacilli were considered to be human; the short, squat bacillus suggested the bovine organism.

For all practical purposes the test is useless. There is one morphologic characteristic, however, to which one must attach some degree of distinctive power. It is the characteristic of nodular staining. Certain bacilli when stained with a modification of Gram's stain (Much's method) show dark nodules which look like spores, and what one would say is, that bacilli showing nodules are almost certainly human, while all bacilli which do not show them are not necessarily bovine.

D. Theobald Smith introduced a test of which he has made considerable use in differentiating between the types. A medium is made consisting of bouillon and glycerin. The medium is of a known slight acidity, and on it a pellicle of the bacillary growth is encouraged. As the organism grows, certain changes become apparent in the acidity of the medium—the acidity may progressively increase, and this is taken to indicate that the growing bacillus is human in type. On the other hand, the acidity may diminish and the medium may actually become alkaline; such is supposed to be pathognomonic of the bovine bacillus.

E. The inoculation test. This test depends on the susceptibility of the bovine species to the infection with the bovine bacillus; it may be carried out on calves, but for economic reasons rabbits are more suitable.

A full-grown rabbit is infected intravenously or subcutaneously with a small known quantity of tubercle bacilli (0.01 mg. intravenously or 10 mg. subcutaneously). After the inoculation one of two things will happen: the rabbit may show no ill effects; its weight increases or remains constant and if it is killed, six months after the injection, the only evidence of tuberculosis will be found in the shape of a few epithelioid follicles in the lungs. The other possibility may be a very different one; the inoculation is followed by a rapid loss in weight, an increasing cachexia, and death within six weeks. Post-mortem examination shows a generalized and rapid tuberculosis. The first result is produced by a human bacillus, the second by a bovine.

By methods such as these which I have outlined, a series of cases has been examined. It has been found that a proportion amounting to 62 per cent. owe their origin to the bacillus of bovine tuberculosis. These cases have been drawn entirely from Edinburgh and its neighborhood and the results obtained give one very serious food for thought. They can mean only one thing—a milk infected to a highly dangerous degree. Since these investigations a thorough examination of the Edinburgh milk supply has been made by Dr. Miller and Dr. Mitchell. The former has found that 16 per cent. of the samples which he examined were infected with bovine tubercle bacilli. The latter has found an even higher degree of infection, namely, 20 per cent.

There is one remark I wish to make regarding the cases due to the human bacillus which amounted to 38 per cent. In every case an inquiry was instituted into the question of tuberculosis existing among the other members of the family.

It was found that in 71 per cent. of these cases there was a history of tuberculosis—usually pulmonary—existing or having existed in the family.

The practical lesson to be drawn from such a fact is the importance of isolating pulmonary tuberculosis.

2. *Routes of Infection.*—The next question to be considered is the route or routes by which the organisms reach the sites in which they later develop.

Bones and joints are rarely the situation of the primary development of tuberculosis; when they are attacked, it is secondary to some more distant infection, and the vehicle by which the infection is carried is the blood, or the lymph stream. Much controversy has been waged over the fact of whether the bone or the joint is the first to become infected, and I shall briefly tell you what experiment would appear to prove.

First and foremost, it is an undoubted fact that it is difficult and in many cases impossible to infect the cavity of a healthy bone with tubercle bacilli—the resistance of the marrow is too great, and the bacilli are almost invariably destroyed.

The second point is, that the joints are readily infected, and the infection is borne to them by the blood-stream. The anastomosis of the circus vasculosus in the fringes of the synovial membrane is more exactly the situation in which the disease begins.

Now clinically an osseous tuberculosis does occur and one naturally asks how one is to reconcile such an occurrence with the two statements just made. The explanation is as follows: While tubercle bacilli cannot develop in a healthy marrow, yet if the marrow is altered, the disease may arise therein. The change in the marrow is of the nature of a gelatinous degeneration—a disappearance of the true marrow-cells, and a proliferation of the fibromyxomatous groundwork.

In a marrow so altered tuberculous disease readily develops.

What causes this marrow change? It is partly the result of a vascular degeneration—an endarteritis and thickening of the vessel-wall with a resulting interference with nutrition—and partly the result of a tuberculous toxemia.

Two groups of vessels may be affected: the main nutrient vessel entering the center of the shaft, or the metaphyseal vessels passing into the bone near the epiphyseal cartilage.

The thickening of the vessels is the result of the tuberculous toxemia—the circulation of the tuberculous toxin. The thickening of the nutrient artery may be secondary to tubercle in various parts of the body; the thickening of the metaphyseal vessels is most usually the result of a focus of tuberculosis in the neighboring synovial membrane.

Therefore, what one knows experimentally regarding the etiology of tuberculosis of bones and joints may be summed up as follows: Synovial tuberculosis is readily produced, and the synovial membrane is infected by the blood-stream. Healthy bone cannot easily be infected with tuberculosis; its marrow must first undergo a gelatinous or fibromyxomatous degeneration, and such a degeneration is the result of a tuberculous toxemia and of a tuberculous endarteritis of the vessels supplying the bone, the nutrient vessels or the metaphyseal. In a bone, the marrow of which becomes so altered, tuberculous osteomyelitis develops.

PATHOLOGY

The first point to arise under the question of pathology is the exact situation of the bone in which the disease begins. I need not remind you of some of the anatomic facts: the epiphysis, the epiphyseal cartilage, the metaphysis and the diaphysis.

The disease may begin in the center of the diaphysis, as is seen, for example, in spina ventosa or tuberculous disease of the short and short long bones. On the other hand, the disease may begin at the articular ends, the metaphysis or in the epiphysis; and whether the epiphysis or the metaphysis is attacked depends on the situation of the reflection of the synovial membrane. If the reflection lies only in relation to the epiphysis, then the epiphysis is attacked, and, if it is in relation to the metaphysis, the metaphysis is the seat of the disease.

Changes Which Result from the Lodgment of the Bacilli

The probability is that the bacilli become originally deposited by an extravasation of the blood from one of the blood-vessels, the wall of which has been previously weakened by endarteritis. A slight sprain may be the trauma. In the effused blood the bacilli develop, and as in tuberculosis elsewhere the result of their growth is the formation of a small tuberculous follicle, perfect in every respect, with giant cells, epithelioid cells and lymphocytes. This is a point which it is important to emphasize. The primary lesion is a true follicle developing in the marrow.

As the follicle enlarges others appear around it, and, amalgamating, may form a mass of appreciable size—so large as to be apparent to the naked eye as a tiny white spot in the center of the marrow.

Coincident with the development of the follicle, changes appear in the center of the follicle and at its periphery. The central change is one of the caseation; the peripheral change is an attempt at fibrosis and localization of the follicle. If the central change is marked and the peripheral one inconsequent, the caseating disease extends rapidly throughout the marrow, and the type of disease known as "infiltrating tuberculosis" results.

If, on the other hand, the peripheral change is more evident, the disease remains localized, as an "encysted tuberculosis."

Independent of the growth of the tuberculous follicle, however, there are coincident changes apparent in the various constituents which comprise the bone, and it is from these changes that many of the clinical appearances gain their characteristic features. The structures which show changes are the bone-marrow, the bone lamellae, the periosteum and the blood-vessels.

1. *Marrow Changes.*—The changes in the marrow are twofold: an early or cellular, and a later or fibrous. The first is an actively antagonistic one, the second is more limiting in its intention.

Cellular changes: The grayness of the original follicle is always relieved by a setting of red, and such coloring is the evidence of the active changes in the marrow around.

Microscopically it is a neutrophil leukoblastic reaction, at first of immature cells, but later of fully developed polymorphonuclear neutrophils.

The cells are possessed of high phagocytic powers; they contain quantities of altered blood-pigment, and their action must frequently lead to destruction of the attacking bacilli.

This, which one may term the acute reactionary stage, lasts for about 120 hours from the date of the original infection. The character of the cells then begins to change, the polymorphonuclears diminish in number, and are replaced by two varieties of cells—a small lymphocyte and a type of immature lymphocyte or large mononuclear cell. The production of these cells is of course very suggestive of the development of tuberculosis. The connective-tissue cells remain constant, the fat cells appear to be diminished, but the diminution is more apparent than real. These changes in their sequence are most intense in the neighborhood of the diseased focus and they extend in a diminishing degree throughout the surrounding tissues. The cellular reaction of the marrow continues as long as the disease is increasing in extent, as long, in fact, as active phagocytosis is necessary. When the growth of the disease becomes arrested the cellular reaction disappears, and the marrow passes into the series of changes which end in fibrosis.

Fibrous Changes: The conversion of the marrow into fibrous tissue is a gradual process which extends over some considerable time. The change is inaugurated by a disappearance of the specialized cells (lymphocytes) with a corresponding increase in evidence of the fat cells, and the appearance among the latter of young connective tissue. This connective tissue develops from two sources: (*a*) from the connective-tissue corpuscles which lie scattered among the fat cells, and (*b*) from the connective-tissue fibrils which exist in the perivascular tissues.

The formation of connective tissue between the fat cells of the marrow gives rise to a curious mosaic-like appearance. The fat cells diminish in size and tend to atrophy, and sometimes the fat becomes broken up into an amorphous collection of analytic products. When the connective tissue is derived from a perivascular source, the vessel acquires a thickened appearance, but there is no endovascular change. The further history of the connective tissue is one of increasing density; the fibrillae tend to lie closer together and to become more compact. The degree of density is greatest in the immediate neighborhood of the diseased focus. Fibrosed marrow is yellowish-white and of a remarkably firm consistency. These marrow changes are the result of specific demands. The primary infection is that of an irritant, and as such it calls forth a simple leukoblastic reaction. With the development of the lesion the specific action of the tuberculous tissue becomes evident, and the result is the production of cells specially antagonistic to tubercle, namely, the lymphocytes. When the antagonistic attitude is no longer demanded, the marrow undergoes a sclerosing change in order to limit and encapsulate the focus.

2. *Lamellar Changes.*—When tuberculosis develops in a bone, the surrounding lamellae undergo distinctive changes. These changes are of two possible varieties, rarefaction of the lamellae—osteoporosis—and thickening of the lamellae—osteosclerosis. In an individual lesion only one type of change may occur, but it is more usual to find the two types occurring together.

Osteoporosis: Rarefaction of the lamellae is brought about by true absorption of the bone, or by a variety of metamorphosis. Osteoclasts are the medium when absorption is the end in view. They appear beside the lamellae, and as a result of their action excavations appear which are known as Howship's lacunae. By continuation of the process large areas of bone are removed, and individual lamellae in process of removal acquire a typical worm-eaten appearance. This is the more rapid mode of rarefaction; it is best seen in those instances in which a considerable portion of bone must be quickly removed and replaced by a specialized fibrocellular marrow.

The metaplastic is the second method of rarefaction, and of the two it is the more common. A lamella is built up of a dense connective tissue, impregnated with lime salts. In the process of metaplasia the lime salts disappear and the fibrous elements remain. At first the position of the original lamella is evidenced by the unusual density of the fibrous tissue, but it quickly becomes imperceptibly merged in the surrounding tissues.

While one has drawn an absolute distinction between these two methods of rarefaction, it must be remembered that the two may and do occur synchronously in the same specimen.

Osteosclerosis: Osteoblasts derived from the connective tissue cells are the factors by which the lamellae increase in thickness. They arrange themselves along the surface of the latter, and deposit successive layers of dense new bone. This new bone possesses certain peculiarities which at once distinguish it from the old: it contains a greater number of bone corpuscles, it stains a lighter color, and the junction line between the old bone and the new is sharp and distinct, with an edge which is often irregular. The process of osteosclerosis is indicative of the more chronic types of bone disease; its objective is a limiting one, but a more passive limitation than that of fibrous marrow, for example.

3. *Periosteal Changes.*—It is recognized clinically that a subperiosteal thickening is one of the earliest features of tuberculous disease of the underlying bone. Such a subperiosteal thickening is the result of a deposit of periosteal bone, and the activity of the periosteum depends on an increased vascularity secondary to the underlying disease. The deposited bone is one of two kinds, porous bone or dense bone, and with each variety the method of formation differs.

Method of Formation of Porous Bone: In the deeper layers of the periosteum, in addition to numerous osteoblasts, there are always to be found a number of osteoclasts. The function of these is normally in abeyance, but by their activity they carry out a preliminary which is essential to the later stages of new periosteal bone formation. The osteoclasts eat out a series of lacunae along the shaft of the bone until the usually smooth surface becomes rough and irregular. Their activity is short-lived, and the completion of the surface excavation is the signal for the cessation of their labors. As soon as the osteoclasts cease their activities, the osteoblasts, which meantime have been proliferating in the deeper parts of the periosteum, suddenly begin to functionate, and a thin layer of new bone becomes deposited on the uneven surface of the irregular shaft. The introductory excavation of the osteoclast is quite an intelligible proceeding. If the periosteal bone had been deposited on a perfectly smooth and even shaft, it would have required only a slight degree of violence to dislodge its attachment, but the preliminary roughening of the surface is sufficient to prevent the possibility of this occurring.

After the first layer of bone is deposited, a second tier is begun. At certain points conical projections of new bone appear. They extend outward as small spines and in the interspinous intervals there is a quantity of granulation tissue and one or more blood vessels. The scheme of architecture undergoes further changes when the spines become joined at their extremities, and a series of arches is formed. Successive series of arches are in this way deposited until a varying thickness of porous bone has been laid down. It is a scheme of architecture in which nature combines a maximum of strength with a minimum of weight.

Method of Formation of Dense Bone: Occasionally the new periosteal bone is compact in character. The preliminaries are similar to those in the deposit of porous bone, but in the later stages no arches are formed, the bone remaining compact throughout. This is the method of deposit which one finds occurring in the neighborhood of joints, the reason being that the amount of its deposit is never excessive; the more profuse porous bone might easily interfere with the mobility of the joint.

4. *Changes in the Blood Vessels.*—One cannot fail to be struck by the frequent occurrence of endarteritis obliterans in bone tuberculosis. The disease affects the smaller vessels and occasionally the primary divisions of the nutrient vessel. In histologic detail the changes closely resemble those which occur in syphilis, but the changes in the tunica adventitia illustrate a distinctive feature. In syphilis the external coat is infiltrated and surrounded by a number of small lymphocyte cells; in the endarteritis of tuberculosis no such cells are to be found; instead there is a development of perivascular connective tissue. The condition arises from the corculation through the vessels of a tuberculous toxin. The change has far-reaching results; the narrowing of the vessel lumen gives rise to considerable disturbance in nutrition, and many of the fibroid changes in the marrow are sequelae to it. Further, the disease of the vessel wall has an effect on the local development of tuberculosis. Many of the cases of so-called primary tuberculous disease occurring in the metaphysis of the long bones, the short long bones, and the short bones owe their origin to an antecedent endarteritis of the larger blood vessels.

The Gross Pathologic Varieties of Osseous Tuberculosis

The previous section has been devoted to what one might term the general pathologic changes, changes which in some degree at least are common to all forms of the tuberculous lesion. Each case of tuberculosis, however, possesses some peculiarity in its general features which justifies its classification under a special type of the disease. Therefore one may classify four different varieties: (1) the encysted tuberculous lesion; (2) the infiltrating tuberculous lesion; (3) the atrophic tuberculous lesion, and (4) the hypertrophic tuberculous lesion.

1. *The Encysted Tuberculous Lesion.*—When the disease focus, after enlarging to a certain extent, becomes shut off and localized, it is termed an encysted tuberculosis. The encysted tubercle is the commonest variety. It is also the most chronic, and its chronicity is evidenced in every step of its formation.

Macroscopic Appearances: The fully developed lesion varies considerably in size: A common gage is from a pea to a walnut. For descriptive purposes it may be considered in a series of zones. The center is occupied by an area of translucent jelly-like material, through which are scattered a number of opaque gray points, rather resembling putty in appearance. When the lesion is of some age the individual opaque spots amalgamate and form a central caseous patch, which is surrounded by a thin shell of the original jelly-like material. Passing to the periphery, there is a band of pinkish-white running round the translucent zone and sharply defined from it. The circumference of this zone merges imperceptibly with the surrounding marrow, which at the line of junction is somewhat more congested than usual. When the disease is of considerable age, the central portion becomes converted into a collection of semi-fluid débris, giving the part a cystic appearance.

Microscopic Appearances: The disease begins as a follicle of the loose reticular type. It enlarges until it can be appreciated by the naked eye as a gray opaque pin-point in a setting of red marrow. There is a ground work of branching connective-tissue cells, and the interspaces are filled with epithelioids and mononuclears: giant cells are usually present.

The impression afforded is one of a chronic and slowly developing tubercle. As the disease develops in the marrow, it comes to surround and enclose a number of bone lamellae, and the latter undergo rarefaction and absorption by means of osteoclasts, the slow development of the follicle usually affording sufficient time for the absorption to become complete. If the absorption of the lamellae should not be complete, the particles which are left, being isolated by the diseased tissue, undergo necrosis and become converted into small sequestra, commonly known under the term "bone sand." In the central clear deposit, areas of caseation appear, and they may coalesce into a patch of considerable size. Around the tuberculous tissue there is a limiting band of connective tissue. It is the pink, limiting band which has been noted in the macroscopic appearances, and it is developed from the connective tissue elements of the surrounding marrow. The changes in the surrounding marrow are not extensive; close to the disease the connective-tissue cells proliferate, and the marrow acquires a loose fibromyxomatous character.

One would summarize the sequence of events as follows: A deposit of reticulated tubercle appears in the center of the marrow, and it increases in amount, the bone lamellae being absorbed, until it forms an appreciable gelatinous-looking patch. Caseation appears in the center of the patch, and the lesion is localized by the formation around its periphery of a pale pink band of loose connective tissue.

2. *The Infiltrating Tuberculous Lesion.*—Nélaton described an infiltrating type of bone tuberculosis in 1836, and it was probably the first variety to be distinctly classified. It essentially represents the acute form of the disease.

Macroscopic Appearances: The naked-eye appearances are best appreciated in a lesion of some considerable size. As in the encysted disease, there is a natural division into a series of zones. The center is occupied by a pale-yellow area, yielding and crumbling when touched: it is the rarefied bone framework, the interstices being filled with caseous débris.

Nélaton described it accurately when he called it *l'infiltration puriforme.* Extending around the central patch there is a zone of gray semitransparent tissue (*l'infiltration grise*), which merges almost imperceptibly into both the central and peripheral tissues. The appearance is afforded by the infiltration between the lamellae of tuberculous granulation tissue which has not yet passed on to caseation. Around the gray zone the marrow is more congested than usual. It constitutes the third or red zone (*l'infiltration lie de vin*). At the line of junction of the gray and the red the latter is sometimes modified to form a paler pinkish band.

Microscopic Appearances: In its earliest stages the infiltration type of disease begins as a deposit in the marrow of a number of groups of epithelioid cells. These coalesce until an appreciable area is occupied by the diseased tissue. The naked-eye appearance is that of a gray, semitransparent tissue filling the interlamellar spaces. Its exact structure is difficult to elucidate. It is composed of densely packed masses of mononuclear and epithelioid cells. Intercellular connective tissue is at a minimum and here and there are branching connective-tissue corpuscles. There is an early arrest of the vascular supply, and to this change one must attach considerable importance; it hastens the process of caseation and in all probability it greatly depreciates any attempt at resistance in the surrounding tissues. Areas of caseation appear in the center of this semitransparent tissue, at first isolated but later coalescing, and it is this caseous change which gives the characteristic yellow appearance to the central part of the lesion. As the disease develops, numbers of the bone lamellae become surrounded. When this occurs an effort is made to remove each individual lamella by means of osteoclasts, and in this the process of rarefaction consists. In an infiltrating disease all active changes are arrested long before rarefaction becomes complete, the blood-flow ceases, perhaps the toxicity of the bacillus is great; at any rate the process of absorption is arrested, the lamella dies and constitutes a sequestrum. Scattered throughout the tuberculous tissue there may be numerous sequestra (*sequestres parcellaires*), each bearing evidence by its worm-eaten appearance of the degree of rarefaction which it has undergone.

If the infection has been specially rapid and acute, necrosis may occur before any degree of absorption has become possible, in which case a large lamellar area dies, and remains in contact with the surrounding bone, until it becomes separated by granulation tissue. Such constitutes a composite sequestrum. In the surrounding marrow there is a leukocytic reaction around the periphery of the disease, and the type of cell which constitutes the reaction is mainly the polymorphonuclear, the representation of lymphocytes and mononuclears being sparse. There is, in fact, a cellular reaction resembling that which one finds in acute infections, and it has been suggested that a mixed infection is the dominating factor in the pathology of infiltrating tuberculosis. Occasionally, the cellular reaction becomes modified, and there is an attempt at fibrous limitation of the disease. This is the explanation of the pink band, which one occasionally finds at the periphery. The periosteum becomes early activated, and forms masses of new bone. The details of the method have already been described. The essential factor is a congestion of the overlying periosteum, secondary to the central disease; the deposit may be localized or it may extend widely over the shaft of the bone.

3. *The Atrophic Tuberculous Lesion.*—The distinctive feature of this variety of tubercle is a wasting and atrophy of the bone lamellae. In some respects, it resembles the caries sicca first described by Volkmann in 1879, and later by Koenig in 1896; but, on the other hand, it has characteristics which associate it with the caries carnosa of Koenig and the *tuberculose charneu* of Mauclaire. It is more correct to consider caries carnosa and caries sicca as the same type of disease in different stages of its development, and confusion is avoided if both terms are combined in the single descriptive title of atrophic tubercle. The reason for this will be more obvious when the lesion has been fully described.

Macroscopic Appearances: The situation of the disease is typical in so far as it attacks the metaphyseal end of a long bone. The affected bone is uniformly and diffusely enlarged. It is much lighter than healthy bone, and its surface yields to the application of a moderate degree of pressure with a curious crinkling sensation. The periosteum undergoes a moderate degree of activity, and a thin sheath of new periosteal bone is deposited. On cross-section of the bone, after the outer shell is divided, the interior is found to be occupied with a soft granulation tissue in which atrophied lamellae are scattered. The granulation tissue is of a flesh color, and throughout its substance there are numerous spaces, producing a spongy appearance. The changes may extend to the articular cartilage, but the latter is never invaded.

Microscopic Appearances—Changes in the Marrow: The earlier changes appear in the marrow, and in their development they are slow and insidious. Gradually the connective-tissue elements increase at the expense of the fatty tissue, and the marrow becomes transformed into a variety of granulation tissue. The granulation tissue is largely composed of connective-tissue cells of a myxomatous type, and the vascularity of the part is considerable. There are numbers of mononuclear cells and osteoclasts, and there is a tendency for the parts to become cystic. Scattered throughout the bone there are tuberculous follicles, but their numbers are few, and in structure they are, almost without exception, reticulated. As the disease progresses there is an ever-increasing tendency for the granulation tissue to become converted into fibrous tissue.

Changes in the Lamellae: With the replacement of the marrow by granulation tissue, the bone lamellae undergo a rapid absorption. It begins in the center of the shaft, and it is the result of the activity of osteoclasts. The absorption extends to the compact bone of the shaft, the lacunae are increased in size, and the whole appearance is one of extreme porosity.

Changes in the Periosteum: With the appearance of radical changes in the center of the bone, the periosteum acquires a sudden activity; the result is the deposit of a sheath of new subperiosteal bone of the vascular cancellous type. The further history of the periosteal bone is thoroughly distinctive of this type of lesion. When a considerable amount has been formed, the foundation from which it springs becomes undermined; that portion which lies in contact with the shaft becomes absorbed, and between the new bone and the original shaft there is a ring of granulation tissue. The periosteum goes on forming new bone peripherally, but the deeper portion continues to be removed, and this is maintained until there is a considerable thickness of granulation tissue separating the new periosteal bone from the original shaft. The result is an increased but very unstable circumference.

4. *The Hypertrophic Tuberculous Lesion.*—As there is a type of bone tubercle in which an atrophy of the lamellae is the distinguishing feature, so there is a form in which a thickening of the lamellae is the predominating factor. Its occurrence is rare, and its situation is typical so far as it attacks the metaphyseal end of a long bone.

Macroscopic Appearances: There is a diffuse thickening of the bone, beginning where the diaphysis joins the epiphyseal cartilage, and extending toward the center of the shaft. The periosteum is readily detached and, in the later stages, there is a deposit of new subperiosteal bone. The weight of the part is considerably increased. When the bone is divided in transverse section, its structure is found to be unusually dense and firm. From the healthy tissue, a hyperostosis can gradually be traced, and the hyperostosis is the result of an endosteal formation. The thickening is not uniform throughout the whole diameter. In the center, there is an area from which the lamellae have been absorbed, their place being taken by a quantity of gray semidiffluent material. Embedded in the center of the soft tissue, there is usually an elongated sclerosed sequestrum.

Microscopic Appearances: Changes in the Blood Vessels: These are given the premier consideration because they are undoubtedly the first changes to appear, and probably the vascular derangement is the essential etiologic factor in the peculiarities possessed by this type of the disease. The changes appear in the larger divisions of the nutrient vessels soon after the latter break up into their primary divisions, and they take the form of a structureless effusion around the vessel, and an endarteritis in the substance of its wall. The perivascular effusion does not remain structureless, it becomes organized and converted into granulation tissue. The endarteritis in the wall progresses, and the vascular and perivascular sclerosis soon leads to an almost complete obliteration of the vessel lumen. It is a periarteritis and an endarteritis.

Changes in the Lamellae: When the thickening of the central vessels has developed, the lamellae immediately surrounding the vessel undergo an absorption and a fibrous metaplasia. These changes depend on nutritional disturbances, resulting from the thickened blood-vessel. Where the lamellae have become absorbed, the resulting space is occupied by a fibromyxomatous tissue. Outside the central area of absorption the lamellae become thickened, and the hyperostosis results from the deposit of bone by osteoblasts lining the lamellar surfaces. It is essentially an endosteal thickening, and the result is a remarkably firm dense bone.

Formation of Sequestrum: When an area in the interior of the bone has been absorbed and replaced by granulation tissue, a variety of sequestrum occurs about the center of the bone. It is the type of sequestrum Ollier called *le sequestre dur*. Its method of formation is as follows: A number of osteoblasts, assuming a sudden activity, deposit a quantity of closely arranged new bone in the center of the area from which the lamellae have been absorbed. This original deposit is not permanent. When it has reached a certain size, it becomes absorbed and is redeposited as a firmer, denser bone. This process of absorption and remodeling is repeated until the deposit is densely sclerosed. Up to this point of development, the term sequestrum is a misnomer, the tissue is not dead. Later it becomes a true sequestrum from the interference with its blood-supply. These are the appearances which one finds on cutting through the center of the diseased bone: an outer zone of hyperostosis, an elongated central sclerosed sequestrum, and an intermediate area of soft granulation tissue.

Changes in the marrow: Mention has been made of the formation of fibromyxomatous tissue in the center of the bone. Generally the marrow undergoes a fibrous degeneration. True histologic evidence of tubercle occurs in the shape of a number of follicles developing in the granulation tissue in the center of the bone.

Changes in the Periosteum: In the early stages of the disease, the periosteum shows no reaction, and the thickening is entirely endosteal in its origin. In later stages, the periosteum is activated, and deposits a thin layer of new bone around the sclerosed shaft.

ABSTRACT OF DISCUSSION

Dr. Leonard W. Ely, San Francisco: I am confronted by a tragedy! The theory, or the inference, which I have nursed so carefully for the past three or four years is in danger of sudden demise. We have all watched Mr. Fraser's remarkable work on bone and joint tuberculosis; and while some of us have not, in the past, been able to agree with him in his conclusions, I think that the evidence which he presents is staggering. He has done most careful work. His methods have probably never been approached in thoroughness; and our first impulse, when hearing his views, is, as it always is when we hear something new, to say, "Why, that cannot be so; because that does not agree with my experience." Well, if careful and scientific work does not agree with our experience, so much the worse, not for the careful work, but for our experience. These things are not to be decided forensically, with "hot air," but by hard work in the laboratory; and while I am not yet ready to accept absolute defeat, I may still say that my opinions, my conclusions, have been very decidedly shaken. It comes back to the bald statement, again, that we really do not know enough about bones and joints. We have not known enough heretofore to reach conclusions that we could depend on. We look at our slides under the microscope and see certain things; and we deduce elaborate theories from them. Another man, however, looks at our slides and deduces other very elaborate theories. Bone-marrow, when all is said and done, is almost a *terra incognita*. I hesitate to say much about this bone-marrow work now. I have always believed, of course, that the red bone-marrow was absolutely essential to the occurrence of bone tuberculosis, but in the face of Mr. Fraser's remarkable work, I would rather wait until I have some more "goods," so to speak, to deliver, before I say anything positive in that line. The battle is on and I shall try to do what I can to maintain my position.

Dr. Albert H. Freiberg, Cincinnati: I greatly admire the thoroughly scientific manner in which Mr. Fraser has proceeded with his work, and the apparently convincing facts that he has brought forward. I think that, perhaps, out of all this will come something that will be of extreme practical importance. We study the pathology of tuberculosis of the bones and joints in the living, in practice to-day, by means of the Roentgen ray; and it seems to me that we can read, in our roentgenograms, much that will be of value to us, resulting from what Mr. Fraser has shown. We have received emphasis on one fact concerning which, perhaps, Mr. Fraser will bear me out. I have been accustomed to lay great stress in the past on the fact that in the roentgenogram of tuberculosis of bones and joints, unless the cases have been in existence for a long time so that the process of repair has proceeded to a considerable extent, we practically never see new bone-formation on the surface. The process is rather one of destruction and wasting. The fact that new bone-formation is seen early in a disease I have always considered as evidence that the disease is not tuberculosis or is not uncomplicated tuberculosis. The fact that tuberculosis and syphilis can coexist, we have been accustomed to recognize for some time. I shall be much interested to hear Mr. Fraser's views on this practical point.

Dr. Fred H. Albee, New York: Confusion may arise in the microscopic study of sections in cases in which syphilis and tuberculosis exist together, or when there is a question of the differential diagnosis between tuberculosis and syphilis. It is hard to tell, microscopically, a syphilitic lesion from a tuberculous lesion, and, at times, I believe, is impossible. Dr. Freiberg has suggested an important point, that when there is bone production, one should be guarded in saying that it is a purely tuberculous bone-lesion.

Dr. Arthur Steindler, Des Moines, Ia.: In 1900 or 1902 Dr. Friedländer, in a monograph on the subject, established three distinct forms of diaphyseal tuberculosis. His investigation was a protest against the theory of the exclusively epiphyseal origin of bone tuberculosis then in vogue; in studies on this subject which we carried on later but did not conclude, we tried, in the first place, to secure earlier diagnosis of diaphyseal tuberculosis in the roentgenogram, and secondly, for early operation in order to reach tuberculous foci in ample time before penetration in the joint. Friedländer's first type was the solitary metaphyseal focus identical with the epiphyseal focus on the other side of the epiphyseal line; the second, the infiltrating form from the medullary cavity through the entire thickness of the bone; the third, the periosteal form, which showed in the roentgenogram several concentric layers of periosteal bone separated by layers of granulation tissue. This classification we used in making subdiagnoses of diaphyseal tuberculosis. In many cases solitary foci could be diagnosed and reached before penetration into the epiphyseal line.

Dr. J. D. Griffith, Kansas City, Mo.: If there is a chance of eliminating the bovine form of tuberculosis from our list of infections and getting rid of it, we shall add immensely to the longevity of our fellow-men. How does Mr. Fraser account for tuberculous infection in man without any seeming interference with the return circulation? If I understood him correctly, in his experience, he has only obtained infec-infection after interfering with the return circulation.

Mr. John Fraser, Edinburgh, Scotland: Answering Dr. Freiberg's question concerning the value of the Roentgen ray in diagnosing pathologic changes in the bones and joints, I believe that, on roentgenoscopy, one is almost certain to find the details of the pathologic changes that we find microscopically and macroscopically. We can actually see, in a roentgenogram, an endarteritis of the blood-vessel. It shows distinctly in illuminated plates, and I think that we can see the pathologic changes occurring. In this way one is frequently guided to the correct diagnosis. Dr. Albee spoke of the difficulty of differentiating between tuberculosis and syphilis. I have shown in every case, on making an injection of tuberculous material into an animal, that the animal never failed to develop tuberculosis. Among those cases which I call the hypertrophic, we found cases of inflammatory reaction, as well as the development of tubercle; and we believe that these are cases of mixed infection. Dr. Fassett spoke concerning the rarity of the occurrence of tuberculosis in the shaft, as a frequent occurrence in the epiphysis; and he mentioned the work of Dr. Noyes of Edinburgh, who thinks that it is entirely metaphyseal or epiphyseal. He does not believe that it occurs in the shaft. Yet it certainly does occur in the shaft. He does not say, however, that it is rare in the epiphysis. That is the most common situation by far. He agrees that it occurs there. Dr. Steindler spoke of the work of Friedländer on diaphyseal tubercle, and his classification, including a purely periosteal form. If you search you will find in every case a central focus. Tubercle cannot occur primarily in the periosteum. It used to be thought that it occurred in the periosteum of the rib, but osteomyelitis occurs in every such rib. Dr. Griffith spoke of the importance of eliminating bovine tuberculosis. That is the most important part of the work. If we can eliminate that we shall have accomplished a great deal. Our system of milk inspection in Edinburgh, at present, is shocking beyond words; but we hope to have this corrected. Dr. Griffith also asked how I could explain the way in which, by retarding the blood-stream, we can localize tubercle, and asked how I could account for tuberculous infection without any interference with the return circulation. I would ask him how he knows that retardation of the blood-stream does not occur in such cases. The tubercle is always secondary to some focus in the body; and with this primary focus you get a thickening of the vessels, which produces a certain amount of retardation of the blood-stream over the entire body.

RECURRENT SPONDYLOLISTHESIS, WITH PARALYSIS; BONE-SPLINT TRANSPLANTATION *

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The fifth lumbar vertebra is subject to many abnormalities of development which may cause mechanical trouble. The most frequent anomaly is probably in the shape or size of the transverse processes. This will not be considered here.

Next in frequency is a variation in the articular processes, which may vary in size, in shape, or in direction. If the articulation be of the lumbar type, with the long axis of the joint antero-posterior, and the flat facets facing to the side, it is possible for the vertebra to slide forward on the sacrum when the spine is straight or extended, especially if the articular processes be small and the ligaments weak. If the processes be of the dorsal type, and this is by no means rare, flexion of the spine, with violence, may cause the facets to override; more easily, again, if these facets be small and the ligaments be weak.

The exhaustive work of Goldthwait[1] explained clearly the mechanism of this class of lesions, but no case of displacement of the fifth lumbar vertebra with paralysis has come under my observation until last year.

CASE REPORT

History.—In the latter part of February, 1913, a strong and healthy girl of 15 was carrying another girl in her arms, in the gymnasium, when she suddenly felt a pain in her back and fell to the floor in a faint. When she awoke there was a severe pain in the lower part of her back, but after a time, with some assistance, she was able to walk home. For a week the pain continued, though less severe, and she was able to go to school, but on the eighth day her legs grew weak and began to feel numb. A week later she was unable to walk at all. The pain radiated down the back of the thighs and legs, and for a time the family physician thought it might be due to "sciatic rheumatism." As it did not respond to salicylates, a neurologist was called in consultation.

The knee-jerks were increased, a slight ankle-clonus was present, and the condition was one of spastic paraplegia. It was thought that possibly a vertebral tuberculosis might be present, with pressure on the cord. A double Buck's extension was applied to relieve the painful flexion of the knees. In a few days the paralysis had disappeared, and the child was sent to the orthopedic department of the Chicago Policlinic to have an artificial ankylosis of the vertebrae made by the Albee method.

Examination.—On examination, however, no evidence of spinal tuberculosis could be found, and it seemed probable that the condition was due to a mechanical cause rather than to disease. An actual forward displacement of the fifth lumbar was not considered as likely as a protrusion of the intervertebral disk, although no history of a sideways bending at the time of the accident could be elicited.

Subsequent Course.—The patient was now apparently perfectly well, and after a week of observation in the hospital she was allowed to go home, in the belief that the trouble would not recur without severe exertion. She was cautioned to avoid lifting any weights and to keep quiet for some weeks. For a week at home she remained well, but the next day she stumbled over some obstacle on the floor and the paralysis recurred. The Buck's extension once more rapidly relieved the paralysis and a plaster jacket was applied, fitting very low over the hips. A few days later an attack of ptomain poisoning occurred, and the jacket was removed by the family physician on account of the distention of the abdomen. Now began a series of attacks of paralysis, averaging one every ten days, until January, 1914, when the child was confined to the bed all of the time. A small and inefficient commercial brace had been applied some time before, but it did no good.

I saw her again Feb. 6, 1914, ten months after she had passed from my observation. No paralysis existed, and the reflexes were normal. On bending her backward in bed, exaggerating the lumbar lordosis, the spinous process of the fifth lumbar vertebra could be felt to move forward abnormally far on the sacrum. This caused pain in the back and a tingling and pricking sensation in the feet. On bending the body forward, obliterating the lumbar lordosis, immediate relief was felt and the child stated that this occurred habitually on similar movements. She lies and sleeps with the spine in flexion for the sake of comfort.

Treatment.—An opinion was now given that the trouble was due to the slipping forward of the fifth vertebra as a whole, and that the best way to rectify it would be to implant a bone splint by Albee's method so as to immobilize the lower lumbar spine. Accordingly, on March 11, 1914, this operation was performed at the Policlinic. A splint was cut from the left tibia, curved slightly to fit the lumbar lordosis and the sacrum, and long enough to reach from the third lumbar process to the third sacral. The lumbar and first two sacral spinous processes were readily split, but the third sacral was merely a small projection, so a groove was cut out bodily in this region. The splint was sewed in with No. 12 braided silk sutures, boiled in mercuric chlorid solution and then in paraffin. These sutures were inserted deeply and strongly, with large needles and a heavy needle-holder, and they were tied very tightly. A layer of the lumbo-sacral fascia was sewed over the whole splint, covering both splint and silk sutures.

The girl was placed in an ordinary bed and kept recumbent for three weeks, when against orders she began to sit up when the nurse was out of the room. April 7 she went home, and April 21 began to walk about. Her back felt perfectly well and strong and she remained in excellent condition until June 4, a period of over six weeks. On this latter date something gave way in her back, causing severe pain but no paralysis. Examination June 11 showed that the upper tip of the splint had become loosened from the third lumbar spinous process. The knee-jerks were normal, there was no ankle clonus and sensation and motion were undisturbed. There was easily perceptible grating and crepitus at the tip of the splint when the back was moved, and the pain was said to be quite severe on such motion. She was advised to keep perfectly quiet for a few weeks, in the hope that union might again take place, but it will probably be necessary to reattach the end of the splint by operation, or to cut the end off to relieve the discomfort. The lumbo-sacral joint remains perfectly fixed and there will apparently be no further trouble from this source.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Goldthwait, J.: Boston Med. and Surg. Jour., 1911, clxiv, 365.

Note.—Aug. 7, 1914. This patient was reoperated on July 1, 1914, and the upper end of the splint firmly reattached by drilling both splint and third lumbar spinous process and tying with silk. She is now sitting up in a plaster jacket without any symptoms referable to the original difficulty. The spine seems strong and the splint is apparently firmly fixed.

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ABSTRACT OF DISCUSSION

Dr. Fred H. Albee, New York City: There has been considerable uncertainty about the result of the application of bone splints in the lumbosacral region. In my experience, the result has been as satisfactory when the graft has been placed in the posterior part of the sacrum as in other regions of the spine. Although the spinous processes there are small, as Dr. Ryerson has said, we are able by means of them, together with the splitting of the periosteum on the posterior part of the body of the sacrum and the scarifying of the bone, to get good union and a good surface for the application of grafts. I have had no trouble in getting union of the grafts in this region. So far as fixation of the fifth lumbar vertebra goes, the contrast of the results of this graft fixation with that of external fixation by means of braces or plaster jackets, is very gratifying. In fact, it is difficult to fix this region by any external means.

Dr. Charles A. Parker, Chicago: One point is of practical anatomic interest in cases in which the operation might not be successful. Fortunately, in the cases reported, it was apparently very successful. This is with regard to the development of the lower half of the fifth lumbar vertebra. The gentlemen who have described that development have gone into the matter thoroughly. The portion of the arch containing the spinous process frequently develops from an entirely different center from that of the upper half, and remains separated, except for cartilage, throughout life; so in the cadaver, the big body with the shortened arch is in one piece, and the lower half, with the lower articular surfaces, in an entirely separate piece. That is the usual variation found. It is united more or less firmly. Another variation is that the two halves of the spinous process may be quite separate. One can conceive that, in a case of that kind, when the graft was implanted into the spinous process of the fifth lumbar vertebra, there would be little control of the vertebra.

Dr. J. Torrance Rugh, Philadelphia: I want to attest the value of the bone graft in this region. In a series of twenty-six cases I have had three in which the graft has been attached to the upper two sacral vertebrae, and the results have been as good as in any of the other sections of the spine. In one of my cases, after a period of six months, when the fixation was firm and the results all that could be desired, the patient on sitting down felt something give way. Examination showed a fracture of the graft between the fourth and fifth lumbar spines. She was placed in a solid plaster jacket and kept in the supine position for nine weeks, when firm union of the graft took place, just the same as it would have taken place in the shaft of any bone. At a subsequent operation, done for the purpose of attempting to reinforce this graft opposite the point of fracture, another graft was inserted; but, through a surgical error on my part, the flap of skin became devitalized, so that the graft was exposed and ultimately came out. As this was the thirteenth operation, it naturally would be expected to fail. That was the only graft that I lost in the twenty-six cases; and I think, from the experience I have had, that the attaching of the graft to the sacral region gives as good results as in any other region. Dr. Ryerson's paper is of immense importance, as opening up a field for the treatment of that most troublesome of cases, the cases of spondylolisthesis. In older patients, past 35 or 40, when it is possible by posture or some other method to eliminate the exaggerated lordosis and replace the cast, we shall have, I think, entire control of cases which hitherto have been extremely troublesome.

Dr. J. A. Nutter, Montreal, Canada: How does Dr. Ryerson explain paraplegia from so low a lesion as slipping of the fifth lumbar vertebra? I recently had occasion to examine post mortem a man with a broken back, at the Montreal General Hospital, and found a marked traumatic spondylolisthesis, probably hastened by congenital malformation of the laminae; without, however, any narrowing of the vertebral canal at that level. This man's paralysis was probably due to a coincident injury to one of the intervertebral disks, three or four vertebrae up, causing pressure on the cauda equina. We could not, at that time, attribute any of his paralysis to the fracture of the fifth lumbar vertebra. There was no narrowing of the vertebral canal at that level, in spite of the spondylolisthesis. I should like to have some light on that subject. How can injury to the cauda equina at the level of the fifth lumbar vertebra cause paraplegia?

Dr. E. W. Ryerson, Chicago: It is quite true that it is not easy to constrict the spinal canal at the level of the fifth lumbar vertebra, but it can be done; and I can think of no other method by which this little girl's paraplegia could have been caused. I could put my finger on the fifth lumbar spinous process, and pinch it, and could then bend her backward and feel it slip so far that I am afraid to tell you just how far I felt it slip. It certainly could constrict any spinal canal that I have ever seen, and I do not think that any intervertebral disk higher up had anything to do with it. She was a sensible little girl and could locate it so accurately that, although I was at first doubtful of the cause, I had to be convinced. With regard to the attachment of the splint to the sacrum, the remarks made are pertinent; but when attachment is made there, it is not mechanically at as great advantage as when it is made to the spinous process. The immobilization must be carried out for a longer time than I carried it out in this case. I should have insisted on a longer period of immobilization. I believe that we must make every effort to prevent strains on the spine. There is a terrific leverage at the third and fourth lumbar vertebrae, and it takes a strong splint to make enough bone to gain security. As time goes on, we may make an attempt to produce ankylosis of the articular facets, rather than put in a bone splint in this locality.

Results of Infant Welfare Campaign.—During 1914 infant welfare work was carried on in twelve localities in New York. During the summer there were thirty-two different localities where such work was in operation. A comparison of the vital statistics of the two summers indicates the saving of many lives. During the four summer months of 1913 there were 4,387 deaths of infants under 1 year of age outside of New York City, while for the corresponding months of 1914 the infant deaths numbered 3,833, or an actual reduction of 554. The infant mortality, based on the ratio of deaths under 1 year of age to 1,000 living births, in 1913 was 141 for the summer months, June, July, August and September, while for the same period of 1914 it was 117. The State Bulletin of Health which presents these figures, states that two factors might influence these statistics, the better registration of births and the mild summer, but a comparison with the statistics of New York City show that these are not responsible to any extent for the great drop in infant mortality. The figures show that the infant death-rate in the city dropped twelve points in 1914 below the record of 1913, while the rate for the rest of the state dropped 23 points.

THE CAUSES OF SCOLIOSIS AND THEIR RELATION TO TREATMENT *

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No one biased in his belief should attempt the study of either the causes or treatment of scoliosis. We must approach the subject with an open mind. Each case is a problem in itself.

The treatment of structural lateral curvature is now advancing apace with our knowledge of other medical and surgical problems. This has been made possible by the investigations of Drs. Bradford, Lovett, Feiss and Forbes, and of late the study of the subject has been stimulated anew by the announcement of Dr. Abbott of Portland. Drs. Bradford and Lovett[1] studied the motions of the normal human spine in its various positions. They found there was no side-bending without rotation and no rotation without side-bending. They also found these motions were more free in flexion.

Lovett[2] experimented with the column of bodies and disks without their posterior segments and found it obeyed the laws of physics for flexible columns.

Feiss studied the complex problems of rotation and lateral bending, both by experiments on the living and by a mechanical model of the thorax and a model of a vertebra with its attached ribs.

Dr. A. McKenzie Forbes, of Montreal, impressed by the failures of all methods to procure the so-called forcible correction with plaster jackets, undertook a further study of the subject to explain and rectify the knowledge.

He has discovered a paradox, which is this: Given a case with right dorsal rotation, the only way to reduce this rotation is to rotate the body trunk to the right. His discovery was made by observations of a scoliotic subject with radiograms, and an exhaustive study of the work of Lovett and Feiss. This rotation is in exactly the opposite direction to that practiced by Abbott and all previous operators in attempting correction. In brief, Forbes puts his patients in a position of extreme flexion and rotation. They are then held in this position by plaster jackets with large windows.

In structural lateral curvature, we are dealing with a condition, not a disease. There are many causes of scoliosis, but they are not so multitudinous and are, in general, of a very different character from what an inspection of the literature would lead one to suppose. Bad seating at school, faulty postures, malleability of the vertebrae, osteomalacia, rachitis, infantile paralysis, empyema, numerical variations, extra and fused ribs, lateral half of a centrum missing, fused vertebrae, etc. —all have a bearing on the subject, some, but not all of them are true causes. In short, have not, many times, the contributing factors been mistaken for the true cause?

When one remembers the small seats in school for the rapidly growing child, the difficulty of getting one's knees under the desk, the curled up and side-twisted position in which we were taught to write, and yet no scoliosis developed, has not in this case the contributing factor been mistaken for the cause? We all sat curled up and sidewise when in school and while growing rapidly, yet no scoliosis developed.

Rachitis, osteomalacia and other bone softenings go into the same list. We have all seen profound rachitis without scoliosis.

Short leg, from whatever cause, and many other so-called causes are subject to the same criticism. Scoliosis occurs in some cases in which they exist, but if they are the cause, why does it not occur in all? The answer is, they may be a contributing factor, but they are not the cause.

Some years ago, Dr. Böhm[3] beautifully elaborated the theory of numerical variation, advanced by Rosenberg, to account for some of the anomalies which occur in the spine and its appendages. Possibly he has since expanded this theoretical garment to envelop spina bifida and all the rest of Nature's defects in the human frame.

Dr. Böhm stated in his paper that asymmetric sacralization might cause a lateral tilting of the top of the sacralizing vertebra and thus cause scoliosis. An inviting supposition, but it does not prove to be the cause in many cases of scoliosis.

Roentgenograms of the scoliotics at the Children's Hospital showed but few in which there was asymmetrical sacralization, and in these few, the top of the sacralizing vertebra was not tipped. At the Massachusetts General Hospital, in taking roentgenograms of subjects with indefinite pains in the back, or when renal or ureteral stone, etc., is suspected, asymmetrical sacralization in all degrees is often found but there is no scoliosis. If ever a cause it is a rare cause.

The Dwight Collection of spines in the Warren Museum further bears this out. Of the nineteen spines showing asymmetric sacralization but one has scoliosis, and that one also shows an absence of the right neural process of the first sacral segment, which is of far greater importance, so far as the cause of the scoliosis is concerned. But Dr. Böhm aroused interest in the anomalies of the spine and the effects they might produce, and for this deserves great credit.

Some three years ago in checking up the work of Dr. Böhm the conclusion was reached that so far as the cause of scoliosis is concerned, congenital defects of the articular processes were of far greater importance than asymmetric sacralization.

The weight of the trunk and upper extremities is largely borne by the flexible column of the vertebral bodies and disks, but it is also supported in a varying degree by the two more rigid posterior columns of the articular processes. Thus the support is tripedal.

With this in mind, we can all see how a missing half of a centrum, a wedge-shaped centrum, whether congenital or pathologic, or an extra osseous center on one side between the bodies, will cause lateral deviation and rotation, hence lateral curvature.

Such cases are rare; however, they form a class which show certain characteristics of their own, especially when they occur in the upper dorsal and cervical regions. The deformity usually appears early in life. They originate from defects in the embryo about the sixth week.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Bradford and Lovett: *Orthopedic Surgery*, Philadelphia, William Wood & Co., 1911.

[2] Lovett, Robert W.: *Lateral Curvature of the Spine and Round Shoulders*, 1912.

[3] Böhm, Max: *A Contribution to the Etiology of Lateral Curvature of the Spine*, Boston Med. and Surg. Jour., Jan. 25, 1905; *The Cause of So-Called Habitual Curvature of the Spine*, ibid., Nov. 22, 1906

Anomalies of the sacrum, involving its neural arch or articular processes are very common. Dr. Goldthwait has already drawn the attention of orthopedic surgeons to these facts and has shown their relation to back strain.

Obstetricians realize the variations in inclination of the female pelvis, and the varying degrees of prominence of the fifth lumbar body, and Dr. Lloyd Brown has made clear the importance of these facts in the production of back strain and ptosis. In the female the average sacrovertebral angle is considerably (13 degrees) greater than in the male.

The late Professor Thomas Dwight once said, "Anomalies of the fifth lumbar vertebra are so common that we hardly know what the normal should be." This is equally true of the sacrum.

Sir William Turner, the famous English anatomist, found separation of one or both of the inferior articular processes of the fifth lumbar vertebra in 5 per cent. of all subjects. The pedicles of this vertebra occasionally fail to unite with the body; spina bifida is frequent in the lumbosacral spine.

Now realizing that the base on which the column of bodies and disks rests—namely, the facet on the upper surface of the sacrum—is not directed upward, but is distinctly inclined forward as well as upward, having a pitch of 40 degrees from the horizontal in the average female, and that this pitch varies in individuals, being often much greater than 40 degrees in women, and that the only bony obstacles to the forward coasting of the fifth lumbar body on this steeply inclined surface are the articular processes in which anomalies are so frequent, one or both being separate ossicles in 5 per cent. of all persons, is it remarkable that under such conditions, the fifth lumbar body should slip forward and hence downward on this incline? At 45 degrees of inclination a movement of one-fourth of an inch forward gives one-fourth of an inch drop.

The structures preventing this forward slipping are ligamentous, with the exception of the inferior articular processes of the fifth lumbar, above mentioned, which articulate with or hook on to the superior articular processes of the sacrum. With increase of the vertebrosacral angle comes increase of this tendency to slide forward, hence an increased strain, vertical as well as horizontal, on these four small processes. As the inclination increases, the horizontal thrust becomes greater and more vertical, that is, the two forces tend to a pure downward strain on the processes; thus in the standing position a large part of the weight is thrown on them.

The ligamentous structures which support this joint are the fibers of the intervertebral disk, which normally allows a certain excursion; the anterior common ligament which here is thin and broad; the posterior common ligament which is narrow at this level; the ileolumbar ligaments running from the transverse processes of the fourth and fifth vertebra to the crests of the ilia; the lumbosacral ligaments running from the lower edge of the transverse processes of the fifth lumbar vertebra to the top of the sacrum; the subflavous ligaments binding the lower edge of the lamina to the top edge of the sacral lamina; the interspinous and supraspinous ligaments and the articular, capsular ligaments about the articular joints. All these ligamentous structures, like other ligamentous structures of the body, are capable of being slowly stretched.

As a hypothesis let us take a patient in which one of these four articular processes is imperfect, or is detached from the centrum, or let one pair be so turned that they face outward and inward, while their fellows of the opposite side face backward and forward, or one pedicle may have failed to unite with the centrum. Under any one of these conditions, the whole support on one side would be ligamentous, while bony and ligamentous support is on the other side. The body of the fifth lumbar vertebra would sag forward and downward on one side, while it is held back on the other, hence, lateral rocking occurs with rotation of the base on which a compound mast, the spine, stands.

There will be a spondylolisthesis of one side. One side of the fifth lumbar body will swing forward about the articular process of the other side as a pivot, and due to the inclined upper surface of the sacrum will drop downward. The result of rotary motion of these two surfaces is well illustrated by a round stick sawed across at 40 degrees of inclination and the cut surfaces slightly rotated on one another.

Now suppose that the bony mass of one of these articular processes is increased in bulk, just as the transverse process of one side is increased in asymmetric sacralization. The vertebra will be pushed up by one leg of its tripedal support. We get forward and lateral tilting combined. Or if there is absence or marked undergrowth of one process, we get a backward and lateral dropping. Either is equivalent to combined side-bending and rotation, hence scoliosis. It is analogous to a camera on a level floor with one short or long leg to its tripod.

As the contributing causes, short leg, bad postures and seating, etc., have all been mistaken for the true cause. So have coexisting anomalies such as asymmetric sacralization and fused and extra ribs been mistaken for the true causes. All who have studied many roentgenograms realize the frequency with which multiple anomalies are found. In fact, it is usual to find several anomalies of varying degrees in one individual, hence the multiplicity of congenital causes recorded for scoliosis.

Anomalies of the spine may occur at any point, but they are more frequently found where a freely movable region joins one in which motion is less free, as the dorsal with the lumbar, or the lumbar with the sacral. As shown above, the joints of greatest consequence, so far as the site of the cause of scoliosis is concerned, are those in which the surfaces between the centra have a sharp downward inclination, the lumbosacral and those between the sacral segments. The sacral segments do not begin to fuse until the seventh or eighth year, and this fusion between the first two segments is often delayed. The articular processes between the sacral segments are always small and often very irregular, hence the first sacral segment may rotate on the second. This is especially found in cases in which the first sacral segment is anomalous. In rare cases it occurs between the second and third segments. The presence of an anomaly at the base of the spine even in scoliotics, does not prove that anomaly to be the cause of the scoliosis. Each case must be studied carefully, as regards the mechanical principles involved.

As the degree of forward slipping or drop depends not only on the character and magnitude of the lesion, but also on the inclination of the sacrum and extent of the consequent dorsal and lumbar anteroposterior curve, so the character of the scoliosis, caused by the same anomaly, may vary in different individuals.

The frequency of these anomalies in scoliotics is well illustrated by the clinic of the Massachusetts General Hospital. Of fifty consecutive cases in which careful roentgenoscopy has been made by Dr. Walter Dodd and Dr. Holmes, forty-four subjects showed bony defects in the sacrum or two lowest lumbar vertebrae.

Of the four patients showing no such lesions, two have infantile paralysis of five years' duration, involving the back muscles; one presents a case of syringomyelia; the others showed sharp dorsal curves with lateral deviation and rotation of the lumbar spine, but no bony anomalies in the lumbar or sacral region.

In the forty-four remaining cases above mentioned, the lesions found are as follows:

Anomaly of inferior articular processes of fourth lumbar	3 cases
Anomaly of inferior articular processes of fifth lumbar	7 cases
One large transverse process of fifth lumbar, Böhm type	2 cases
Failure of fusion, one pedicle, fifth lumbar	1 case
Overgrowth of right articular process of sacrum	1 case
Undergrowth of right articular process of sacrum	1 case
Articular process of sacrum forward	4 cases
Spina bifida first sacral segment with deformed process	9 cases
Anomalous fifth lumbar or first sacral vertebra which has rotated	12 cases
Anomalous sacrum	2 cases
Rotation of first two sacral segments on the third	1 case
Collapse of one ilium	1 case

This gives an outline of what may cause scoliosis. Mistakes in interpretation may have been made, but by the assistance of Drs. Dodd and Holmes the findings in most of them are correct.

This study brings out the value of the flexed position. In attempting correction, not only should the thoracic spine be flexed, but the lumbar spine should be flexed on the sacrum, and the sacrum flexed on the lumbar spine; for flexion separates the articular processes and helps to get the sacrum forward under the spine.

The supine position with the foot-sling helps to draw the pelvis up and forward, while gravity pulls the trunk downward.

This study also suggests that in some of these cases, and possibly in many, operation should either precede or follow correction. In the first class it should be to replace the fifth lumbar centrum to its position on the sacrum, or to remove asymmetric overgrowth of the processes, which prevent restoring the base to a position of equilibrium; and in the second class to prevent recurrence of the deformity by means of bone graft to lock the fifth centrum to the sacrum; or on the articular processes to hold the vertebra in its place.

It is evident that the lumbo-sacral region is not thought to be the only region in which is found the congenital causes of scoliosis, but it is one of the most frequent sites of the cause in those cases occurring in girls about the age of puberty. At that age the lumbosacral angle increases, that is, the downward pitch of the inclined base; the ligaments are soft, due to rapid growth; the epiphyses have not all united, especially those of the iliac crest to which the iliolumbar ligaments are attached; and the body-weight is increasing.

Careful roentgenographic study of the whole spine is indispensable before any treatment of scoliosis is undertaken. Stereoscopic roentgenograms best show the position of the fifth lumbar vertebra in relation to the surrounding structures. In early cases the radiograms should be taken with the patient standing in order to show the position of the base in lordosis and in weight-bearing.

By the procedures of Forbes and Abbott some of the deformities of the spine may be corrected, but by these methods nothing has been done to remove the cause of the scoliosis. Will the corrected spine be able to maintain its equilibrium on the unstable base, from which this spine has already fallen? Should not this point be considered before subjecting a patient to the discomfort of a forcible correction?

I wish to thank Dr. Dodd and Dr. Holmes for their interest and assistance in this work.

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ABSTRACT OF DISCUSSION

Dr. Harry Hudson, Philadelphia: About 1908, I reported a case of congenital scoliosis with not only structural but also numerical variation. There were thirteen ribs on one side and fourteen on the other; two supernumerary vertebrae were interposed, and there was fusing of two of the ribs. This case showed me the possibilities in the way of structural changes as the cause of scoliosis; and while I have not carried out studies on this, as Dr. Adams has done, I have been careful in my roentgenoscopies since then. I now have four cases of asymmetrical sacralization of the lumbar vertebrae; one case of supernumerary half-vertebra interposed, causing an angulation of the spine; and another case of numerical changes in the ribs. I theorized considerably on this question but I did not have the energy to carry the theory out, that many cases of scoliosis must be due to some congenital malformation. That is, we cannot explain why children of ordinary good physique and musculature should suffer from so-called faulty positions, when other children of less muscular ability who have been subjected to the same conditions do not seem to have any trouble. This point should be investigated, and if we follow that line in roentgenoscopies in our cases of scoliosis we shall find more frequently, probably, minor changes in the facets and the spine. I think that they are often there and are a deciding factor in so-called cases of static scoliosis.

Dr. John Dunlop, Washington, D. C.: Dr. Adams did not seem to go very much into the question of treatment. What has he to suggest in that line?

Dr. Z. B. Adams, Boston: With regard to the question of numerical variation, I would call attention to the admirable work of Dr. Böhm, in which he followed out Dr. Rosenburg's theory of cranial or caudal progression, to explain the occurrences of the various anomalies. Certainly Böhm deserves tremendous credit. I think that although in Germany Dr. Kollicker has done some work before, yet this work of Böhm was excellent. Many of these changes, however, are not due to numerical variation; that is, to asymmetrical sacralization. It is possible to have this in all degrees without any scoliosis. Asymmetrical sacralization is found in Roentgen-ray clinics. In taking roentgenograms for suspected stone in the kidney or pain in the back we find the broad wing and no scoliosis, and this is borne out by the collection in the Warren Museum. Out of this collection there was but one that showed scoliosis, and that one shows asymmetrical sacralization with the absence of the neural arch of the first sacral segment. This allows the fifth lumbar vertebra to tilt back on one side, hence is the cause of the scoliosis. Each case must be studied by itself, with the mechanics of this portion of the spine borne carefully in mind. Concerning treatment, in the very early cases a great deal can be accomplished by teaching the children to stand in a proper position, that is, when the processes are small and show an inclination to unlock. That inclination is best shown when the roentgenogram of a child is taken in the standing position, with the lumbar spine in the position of lordosis and weight-bearing. It can be treated by exercises for the purposes of muscular development, producing a flat back and no lordosis. In the more severe cases, with a large transverse process on one side, surgical measures are demanded.

PLAGUE IN HAVANA

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The first case of plague known to occur in Havana, Cuba, was discovered July 6, 1912, in the person of a Spaniard residing at No. 2 Mercaderes Street. Two additional cases occurred July 12 and 22 at Justiz and Baratillo streets, about four blocks distant from the first case. The district involved in this infection is about three blocks from the water front and in the wholesale commercial district of the city.

The infection was at first supposed to have been imported from Porto Rico, the capital of which, San Juan, was at the time plague infected. Subsequent investigation, however, by the Cuban health authorities, indicates that the infection was a direct importation from the Canary Islands, where plague was present at the time, though concealed and stubbornly denied by the Spanish authorities.

Owing to the early discovery of the disease and the thorough and excellent work of the Cuban Sanitary Department this outbreak was confined to the three cases mentioned above.

About one year and a half later, that is, Feb. 22, 1914, the first case of plague of the present outbreak was discovered in Havana at No. 1 Officios Street, which is in the block adjacent to that in which the first two cases occurred in 1912. Whether this second appearance of plague was simply a continuation of the old infection or a new importation is a moot question. The former is the more reasonable view and is supported by Dr. Juan Guiteras, Director of Health of Cuba. The case of February 22 was followed by twenty-four other cases, making a total of twenty-five within the city of Havana. The last case occurred June 22.

Two other cases were found in the neighborhood of Havana, the first at Artemisa, 45 kilometers to the southwest of the city, April 18, the second at San Jose de las Lajas, a town about 25 kilometers southeast from Havana, June 15. As the infection in both these cases was clearly traceable to Havana and they were treated in that city, these properly belong with the Havana series.

May 30 an infected rat was found in the freight station in the town of Jaruco, 37 kilometers to the eastward of Havana on the railway between that city and Matanzas. The station and surrounding structures were disinfected and there were no further developments.

June 23 a case suspicious of plague was reported from Santiago de Cuba in the eastern extremity of the island. Later it was confirmed, after inoculation tests and the exposure of guinea-pigs in the infected locality had shown positive results. Plague-infected rats were found about the same time.

It may be considered as more than probable that the spread of plague infection outside of the original focus in Havana was due to the action of a Mr. Gonzales, a wholesale provision merchant who, when one of his employees sickened with what he thought might be plague, and later was confirmed as such, concealed it, and, knowing that as soon as the case was discovered his warehouse would be quarantined and fumigated, disposed of as much of his stock as possible, sending it to various parts of the city of Havana and throughout Cuba, including the subsequently infected points, San Jose de las Lajas, Jaruco and Santiago de Cuba. He is at present being prosecuted before the courts.

It should be observed that two weeks prior to the appearance of the first case of the present outbreak in Havana, the sanitary authorities had noted some rat mortality. Anti-rat measures were put into effect at once, even before the discovery of the first human case of plague. With a few exceptions all the cases may be traced directly or indirectly to the original focus near the Havana water front.

A secondary well-marked focus developed later in the extensive stables of the Department of Public Works in Figuras Street. Two infected rats were found here, the first, April 17, the second, April 24. These are the only infected rats found in Havana. This focus gave rise to six cases.

On account of the character of the stable buildings and grounds, disinfection by the usual methods was futile and the Sanitary Department decided to destroy the infection by fire. The stables and everything within them, except the animals, carts and harness, were converted into ashes, April 25. This radical measure was effective in destroying a very menacing focus of infection. No other case developed from this source, except perhaps Case 25, in which the place of business of the patient, No. 2 Concha Street, was on the route taken by the employees, animals and equipment of the stables destroyed, when they were moving into new quarters.

SANITARY ORGANIZATION

Sanitary measures throughout the Island of Cuba are under the control of the Department of Health and Charities, the head of which is a cabinet officer. The secretary of this department, which is, in truth, a department of public health, is at present Dr. Enrique Nunez, a physician of ability. The actual work of sanitation, however, is in charge of the Director of Health, Dr. Juan Guiteras, and a very capable corps of assistants.

Every municipality throughout the island has a chief sanitary officer reporting to the Director of Health. In Havana the government maintains the well-known "Las Animas Hospital" for the care and treatment of all cases or suspected cases of communicable diseases, which hospital is in charge of the Director of Health, as is also the well-equipped laboratory connected with the department. In normal times a personnel of about 100 men is kept on duty inspecting, fumigating and rat-catching. In times of epidemic outbreaks, as in the present case, this number is very materially increased. An official bulletin is published monthly by the department, containing interesting morbidity and mortality statistics and original articles of value, the more important being published in Spanish, English and French. The general organization of the department makes for quick and efficient work.

The sanitary measures put in force during the present outbreak of plague are directed primarily against the rat and flea and may be considered under the following headings:

INSPECTION

The relation existing between the inhabitants of Havana, the hospitals and the medical profession is such that thorough inspection is facilitated. The Spanish-born population of Havana maintains its original provincial character by becoming affiliated to social and mutual aid societies named after the Spanish provinces from which they come. We thus find the "Gallego" Center, the "Asturian" Center, etc. In addition to these regional centers, or societies, there is a rich and powerful organization known as the "Association de Dependientes" (Association of Employees), to which all Spanish and Cuban employees are eligible to membership, although it is largely made up of the former. The three associations mentioned have a combined membership of about 75,000 men. The importance of these centers from a sanitary point of view is that all these organizations maintain excellent hospitals and dispensaries for the benefit of their members who, when ill, are only too glad to report at once to the medical officers in charge for treatment. These hospitals are known by the euphonious title of "Quintas de Salud," or health villas.

Citizens of Cuba not affiliated with the societies mentioned above, when ill, are entitled to the benefits of the state dispensaries, maintained by the state under the direction of the Department of Health and Charities. The sanitary inspectors of this department respond to the calls made on them by those in need of medical assistance and investigate reports of disease made by the police authorities, taking such action as the case may demand.

The well-to-do are, of course, treated by their own physicians, who in accordance with the sanitary laws and regulations must at once report to the health authorities all cases of communicable diseases. In the present instance strict enforcement of these regulations is made possible by the almost unanimous interest and cooperation of the medical profession of Havana, which is working in entire accord with the Department of Health and which, if anything, is at times too quick in reporting suspicious cases.

From the foregoing it will be seen that inspection is thorough and well under control of the sanitary authorities. All suspicious cases are at once removed to one of the Quintas de Salud or to Las Animas Hospital. Under no circumstances are patients with quarantinable diseases treated at their homes.

DIAGNOSIS

The definite diagnosis of cases of an epidemic disease is secondary only in importance to a well-established inspection service; in fact, it is of equal importance in epidemiologic work. This is well provided for in Havana. All cases of illness of a suspicious nature are reported to the Director of Health, who at once convenes a legally appointed board, known as the "Commission of Infectious Diseases." This commission consists of five members, including the Director of Health. The appointments are non-political and are based solely on high professional standing and recognized diagnostic ability. The findings of the commission are absolute and not subject to review by other authority.

In drawing its conclusions, so far as plague is concerned, the commission depends on four factors, to-wit: (1) clinical symptoms, (2) the microscopic examination of the body liquids, (3) cultures from these, and (4) results of inoculation of susceptible animals.

A diagnosis of plague is never made on the clinical symptoms alone; one or more of the other factors must be positive. With the diagnostic work in the hands of competent men the chances of error are small, but they may occur and in fact have occurred in one or two instances. In each of these cases the commission has demonstrated its sincerity and frankness by revising its diagnosis. For instance, in Case 2, the first three factors were negative of plague and the fourth having also failed to give positive results after the usual time, a negative diagnosis was rendered; yet, when the inoculated animal was killed on the tenth day and the lesions of plague found, the case was at once announced as positive, although the patient was at the time practically well.

DERATIZATION

Since the first outbreak of plague in 1912, deratization has been constantly practiced in Havana. Two weeks prior to the recognition of the first case in the present outbreak it was extensively carried on, owing to the reports of the finding of dead rats by the sanitary inspectors. The work has been actively pushed up to the present time, and all rodents caught or killed are examined for plague in the laboratory of the health department. Over seventy thousand rats have been examined since 1912, and only two found plague-infected, both during the present outbreak, the first, April 17, the last, April 24.

RAT-PROOFING

Havana has the advantage that its buildings are to a great extent rat-proof in structure or can be easily made so. During the outbreak of plague in 1912 almost the entire commercial district was rat-proofed. This work is now being actively pushed whenever it is required, in the infected area or elsewhere.

In accordance with an order recently issued and applicable throughout the Island of Cuba, a fine will be imposed on any person on whose premises rat holes or runs are found. The order goes into effect six months after date of publication.

In connection with deratization and rat-proofing it is interesting to note that the sewerage system of Havana is now practically completed and was put in operation March 1, 1913. It is one of the most complete systems ever devised and the cost of the entire work when finished, including the conduits for surface drainage, will amount to about $23,000,000.

A few of the former sewers in old Havana draining into the harbor are still used in part. They are closely connected with the main infected district and it is quite possible that they harbor rats. They have been thoroughly fumigated, but it is the intention of the sanitary authorities to open them up so as to get an exact idea of conditions.

While the sewerage and drainage systems are excellent in construction and will serve to advance the general sanitary conditions of the city, the best results cannot be expected as yet, for the reason that the house connections are faulty. This is now being attended to. Of the 20,000 houses in Havana, 5,000 have been examined, and when the connections were not properly made the defects have been removed. The work of inspection will continue until all connections are made sanitary.

DISINFECTION

The agents for this purpose are hydrocyanic acid gas, sulphur dioxid, phenoco and a similar phenol disinfecting fluid, steam and fire. In fumigation work hydrocyanic acid has given excellent results and is preferred to sulphur dioxid. The method employed in its use is as follows:

The capacity of the space to be fumigated is first calculated, and the amount of potassium cyanid and sulphuric acid required determined in accordance with the following standard: For every cubic meter, 20 gm. commercial potassium cyanid, 40 gm. crude sulphuric acid, and about 100 c.c. water. The potassium cyanid is divided into convenient parts and each enclosed in three thicknesses of manila paper. A number of earthenware, or better, wooden vessels corresponding to the number of packages of potassium cyanid to be used are then provided and distributed about the building. Into these vessels is poured the aqueous solution of sulphuric acid. All openings having been closed except that of exit for the operators, the packages of potassium cyanid are thrown into the receptacles containing the sulphuric acid, the operators retreating toward the exit, which is sealed when the last receptacle is put in operation. The time of exposure varies from six to twelve hours, usually the latter.

The success of the operation without harmful results to the operators is based on the paper packages of potassium cyanid. As before stated, the chemical is protected by three layers of manila paper bagging, great care being taken that there are *no* holes in the paper, and by actual laboratory experiment it has been determined that from twenty to twenty-five minutes will elapse before the sulphuric acid solution destroys the paper envelope and the chemical action begins setting free hydrocyanic acid gas.

This gives ample time for putting in operation the number of receptacles necessary even in large and irregular buildings. The amount of potassium cyanid in the packages varies, according to the amount and distribution of the space to be fumigated. Packages ordinarily contain 1, 5, 10 or even 20 kg. of potassium cyanid. In actual practice the best and cheapest receptacle has been found to be the wooden barrels used for packing lard.

The effects of hydrocyanic acid fumigation are striking. No living thing seems to escape its lethal action, while inanimate matter is left unscathed. Merchandise, silks and satins, metals, foodstuffs, none are in any way injured by its presence. It is an ideal substance for fumigation, when plague or yellow fever are concerned, but its germicidal power is weak.

For fumigating small spaces such as rat-holes, runs and caves, Dr. Hugo Roberts, Chief Quarantine Officer of Cuba, has devised a simple, cheap and efficient apparatus. It consists of a wooden box 12 by 4 inches with a false bottom with two circular openings into which are inserted two 1,000-c.c. bottles with rubber stoppers, each perforated with two openings to permit the passage of the glass tubing connecting the two bottles and each in turn to the rubber bulb and the outlet tube, to which, for convenience, a glass nozzle may be attached.

The bottle to which the rubber bulb is connected is charged with sulphuric acid diluted with two or three times its volume of water. The bottle to which the rubber tube and glass nozzle is attached is charged with powdered potassium cyanid. By means of pressure on the bulb the acid solution is forced into the bottle containing the cyanid. Chemical action is at once set up and hydrocyanic acid gas rapidly evolved, passing out through the glass nozzle which has been previously inserted into a rat-hole, the open space around the nozzle having been sealed with a dash of cement mortar.

The box is fitted with a movable handle which serves several purposes, to-wit: (1) convenience in carrying about, (2) facilitates the removal of the bottles for recharging, and (3) serves as a rest for the exit tube in order to avoid kinks and the consequent interference with the escape of the gas.

The apparatus may be made of any convenient size. For small rat-holes the size described above is used; for larger holes bottles having a capacity of 5,000 c.c. are employed. In the larger size the air tube is attached to a bicycle pump instead of the rubber bulb.

Larger sizes than this have not been used; but, if necessary, it seems quite possible to greatly enlarge the instrument up to the size, let us say, of the ordinary formaldehyd autoclave, placing it on a truck or carriage so that it can be carried about with ease.

The small apparatus is charged with 150 gm. of powdered commercial potassium cyanid and about 300 gm. of crude sulphuric acid, diluted with three times its weight of water. This is calculated to yield 10 cubic meters of 1.6 per cent. hydrocyanic acid gas. In a confined space the percentage of hydrocyanic acid gas will be materially increased.

The apparatus is now extensively used in the anti-rat campaign in Havana.

Sulphur dioxid is used principally for fumigating sewers and for the purpose of determining their connections with rat-runs and caves. Steam is employed in the disinfection of bedding and clothing, etc., at Las Animas Hospital.

Fire, as previously mentioned, was used to destroy in its incipiency the focus in the stables of the Department of Public Works. Six patients were infected here, and as it was impossible to disinfect these stables by ordinary methods, they were ordered to be burned under the direction of the fire department.

Phenoco and a similar phenol disinfecting fluid are utilized for washing floors, walls, etc. The germicidal power of the former has been standardized according to the methods employed by the U. S. Public Health Service and found to be from fifteen to sixteen times stronger than phenol (carbolic acid).

The modus operandi in the disinfection of a building is as follows:

1. Fumigation with hydrocyanic acid gas.
2. Diligent search for rat-holes, which when found are fumigated with hydrocyanic acid with Dr. Robert's apparatus.
3. Tracing rat-holes, for which purpose, if necessary, floors and walls are removed and opened.
4. Washing floors and walls with phenol disinfecting fluids.
5. Inundation with mild solution of a phenol disinfectant.
6. Rat-proofing.

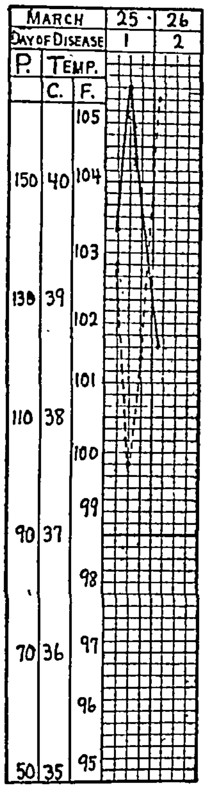
It is interesting to note that no secondary cases have occurred after the disinfection of a locality.

DEPOPULATION AND SANITARY CORDON

One of the most striking features of the anti-plague campaign in Havana has been the depopulation of seventeen blocks, in the center of the commercial district of the city and the throwing of a military cordon about this zone, within which were located the two principal foci of infection. The depopulation was carried out under the authority of a section of the sanitary code which empowers the health authorities to close any house, building or establishment which is considered dangerous to the public health.

The depopulation was practically completed within twenty-four hours. Nothing was removed from the zone. The well-to-do were allowed to go where they pleased after leaving their new address with the sanitary department. Those who were in want, or could not afford to move elsewhere, were sent to the quarantine camp at Trisonia and there maintained at the government's expense.

The entire zone was then disinfected block by block, including the sewers connected therewith, beginning at the point furthest from the harbor and advancing toward the water front. That portion between the lower end of the zone and the wharves was also fumigated. All buildings not rat-proof were made so. Three weeks elapsed before the "zone" was opened up and the inhabitants allowed to return. Taking everything into consideration, the work of depopulation was carried out without undue friction. Of course, there were a number of violent objectors, upheld by a small portion of the press; but on the whole the people affected took the matter sensibly and with good humor.



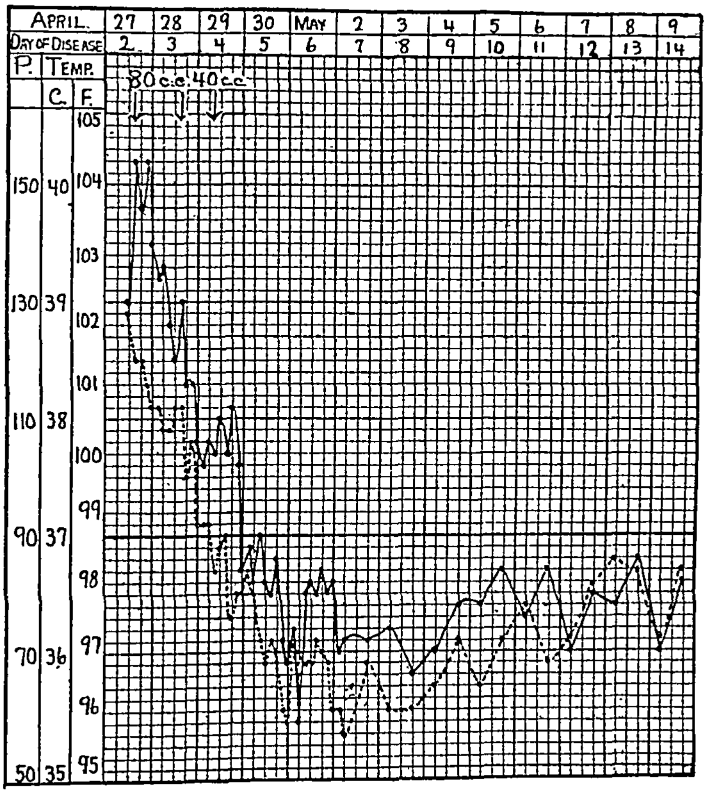


Chart 1.—Clinical chart of Case 5, storehand, aged 12, native of Spain, with septicemic plague. Death in thirty-six hours. In this and the following charts, the temperature is indicated by the solid line and the pulse by the broken line.

Chart 2.—Clinical chart of Case 10, laborer, aged 29, mestizo, Cuban, with bubonic plague. Type of severe case ending in recovery.

INTERNAL QUARANTINE

No restrictions were placed on personal travel. Coastwise vessels are fumigated at Havana and all freight capable of harboring rats fumigated, except such freight as might be certified as coming from interior non-infected points and loaded directly from a rat-proof wharf.

OUTGOING QUARANTINE

Vessels leaving for foreign ports are fumigated for rats by the Cuban authorities on request. The Cuban quarantine regulations require the fumigation of all vessels that have docked at Havana and are bound for Cuban ports. Such vessels are fumigated in the stream immediately before sailing. Hydrocyanic acid gas is used for this purpose with excellent results. Vessels bound for the United States via Cuban or foreign ports are fumigated with sulphur by the Cuban authorities, under the supervision of the U. S. Public Health Service, and a certificate to that effect is issued. A brief summary follows of the outgoing-quarantine measures enforced by the United States Public Health Service against vessels, passengers and cargo bound for United States Ports.

1. Vessels to be fumigated every thirty days. This was continued until about the middle of May. Subsequently the time between fumigations was made fifteen days.

2. All vessels to have approved metallic rat-guards on all lines and to be fended from the wharf at least six feet, gangways to be raised at night unless loading. With the precautions mentioned above, vessels were allowed to dock at rat-proof wharves except during the first few weeks, when they were compelled to anchor in stream. Bills of health were refused to vessels unloading at non-rat-proof wharves unless fumigated in the stream when empty and loading from lighters.

3. Vessels anchored in the bay are required to take the same precautions as above, and all lighters must be removed from the side at night.

4. The fumigation of all parts of the vessel simultaneously without cargo. Amount of sulphur was at first 3 pounds per thousand cubic feet without cargo and 4 pounds with cargo. Time of exposure six to twelve hours, respectively. At the end of April this was changed to 4½ pounds of sulphur and twelve hours' exposure in *all* cases, with the exception that living quarters were given only six hours.

5. Up to April 15, crews were not allowed ashore. Subsequent to this date they were permitted to land between sunrise and sunset. June 26, masters of vessels were given permission to go ashore at all times.

6. Personal health certificates to the effect that the party interested had not been within the infected zone for a period of seven days were issued from March 7 to April 15. After that date only inspection of passengers and the taking of temperature of second-class and steerage passengers was required.

7. First-class passengers in transit were not allowed to go ashore until April 16, when they were permitted to do so between sunrise and sunset. Second- and third-class passengers in transit have not been allowed ashore at any time.

8. No cargo liable to harbor rats has been allowed aboard unless passed by an inspector or fumigated.

9. Fruit coming from non-infected points in crates not rat-proof was allowed to be loaded subject to inspection. The fruit must not be stored in Havana, but must be loaded direct from the cars to the vessels from approved wharves or by means of lighters loading from them.

CLINICAL NOTES ON PLAGUE AS OBSERVED IN HAVANA

With four exceptions all the cases of plague in Havana, including those which developed in Artemisa and San Jose de las Lajas, were observed by me at some time during the illness. There was a total of twenty-seven cases, including the two occurring in the vicinity of Havana. The latter for all practical purposes belong to the Havana series, the infection being clearly traced to that city. Of the total, six cases ended fatally, giving a case mortality of 22.2 per cent., which is very low, lower it is believed than has been registered in other known epidemics of plague.

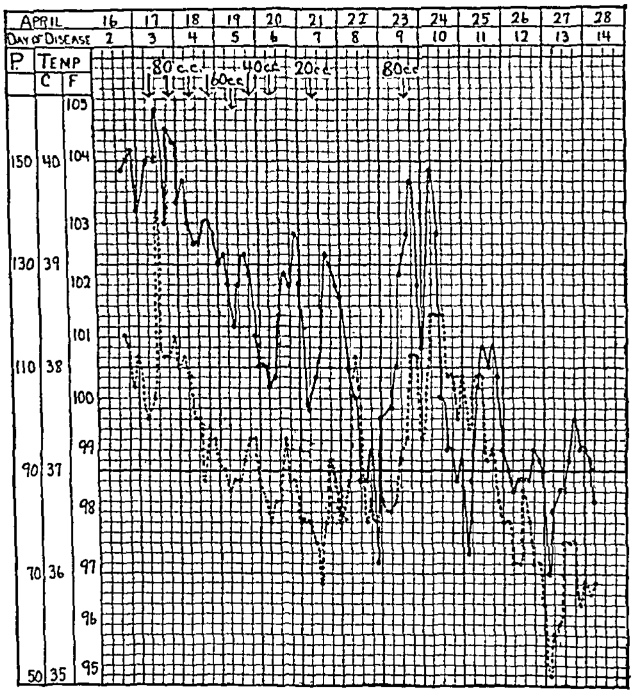


Chart 3.—Clinical chart of Case 13, laborer, aged 20, negro, native of Cuba, with bubonic plague. Type of mild case. Dissociation between pulse and temperature may be noted on the second and fourth days of the disease.

All the cases were of the bubonic type with the exception of Case 5, in which the *Bacillus pestis* was found in the blood, no glandular enlargement being apparent. The case ended fatally within forty-eight hours. Of the bubonic cases all were of the femoral or inguinal variety save two in which the axillary glands were involved. In one of the latter cases the axillary bubo was followed by involvement of the cervical glands near the angle of the jaw, and, strange to say, of the opposite side. This case terminated fatally within seventy-two hours. In one case, No. 11, the initial bubo appeared in the glands above Poupart's ligament.

In the remaining twenty-four cases the bubo first appeared in the femoral region. Later, however, as the disease progressed, the inguinal glands above Poupart's ligament became involved, and in the majority of the cases the surrounding cellular tissues showed distinct signs of infiltration. As a rule the buboes were very painful and tender to the touch. With two exceptions the buboes suppurated and were opened, the healing process thereafter being long and tedious. There have been no cases of pneumonic plague.

Clinical charts of Cases 5, 10 and 13 are herewith appended. They are interesting as showing three different types of plague. Chart 1 represents a septicemic case ending in death in thirty-six hours. Chart 2 records a typically severe case ending in recovery. Chart 3 shows a mild case. In some of the first cases, a dissociation between the pulse and temperature, such as occurs in yellow fever, was observed. A study of the entire series of cases shows, however, that this symptom is not at all constant. Albuminuria was present in all the cases. The amount of albumin was greater than that found in the hyperpyrexia of typhoid and malarial fevers, and the presence of epithelial casts shows that the kidney is seriously involved. The amount of albumin, however, never even approaches that found in yellow fever, with the same febrile movement, that is from 39.5 to 40.5 C. (103.1 to 104.9 F.).

As in other acute infectious diseases, plague may manifest itself in a very mild form, and may be entirely overlooked unless all means at command are exhausted before determining the diagnosis. Cases 2 and 26 of the Havana series are excellent examples of this. In both it was only by painstaking inoculation and cultural tests that the true nature of the disease was finally established.

TREATMENT

The treatment has consisted of intravenous administration of massive doses of Yersin serum, 80 c.c. being administered twice daily during the first three or four days of the disease, or in fact so long as the temperature remains above 39 C. (102.2 F.), the doses diminishing gradually as the temperature falls. Over 500 c.c. of Yersin serum have been administered to one patient in divided doses. The height of the temperature is the guide for the quantity and frequency of serum administration. After suppuration has occurred, and the temperature is wholly or in part due to this process, the fever no longer serves as a guide, and in fact it is found better then to stop the serum altogether. The ill effects of these large doses of serum are counteracted by the administration of calcium chlorid, 1 or 2 gm. daily.

This treatment has given excellent results, as may be seen from the case mortality, which is, as before stated, but 22.2 per cent.

Other general symptoms are treated as they arise, depression by stimulants, principally strychnin; irritability and other cerebral symptoms, by anodynes, particularly drop doses of tincture of opium, diminished renal activity, by hexamethylenamin. Warm wet applications are applied to the bubo, which is opened so soon as suppuration is apparent.

CONCLUSIONS

The following conclusions, I think, are warranted from the above résumé of the history of the late outbreak of plague in Havana:

1. That plague, like other epidemic diseases, may be controlled and eradicated with comparative ease if the health authorities are given the necessary legal and financial power to carry out sanitary measures.

2. That in antiplague work passenger traffic need not be interfered with. In other words, the human plague case is a negligible factor in a well-organized antiplague campaign.
3. That the measures adopted by the U. S. Public Health Service to prevent the introduction of plague from Havana into the United States were effective.
4. That the intravenous administration of large doses of Yersin serum during the active infective period of the disease seems to be the best mode of treatment known to us at present.

CYSTIC ODONTOMAS *

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The subject of cystic odontomas has not received in this country the same study that it has in England, Germany and France. The importance of the subject is readily appreciated when one considers the marked deformities of the face and jaws that accompany these growths, which early diagnosis and thorough operation might have eliminated in many cases.

Cystic odontomas will be considered under two classes—the simple cysts and the adamantinomas. The simple cysts are again divided into two types: Type A, including the cysts commonly called dental or root cysts, and Type B, those usually called follicular cysts and containing a partially formed tooth. The term "follicular" cyst used for the second type is misleading in that one takes for granted, without knowing definitely, that this type is developed from the follicle of a tooth. The term "dentigerous" cysts is used quite loosely and may refer to either of the foregoing types of simple cysts. For this reason, it has not been used in my classification.

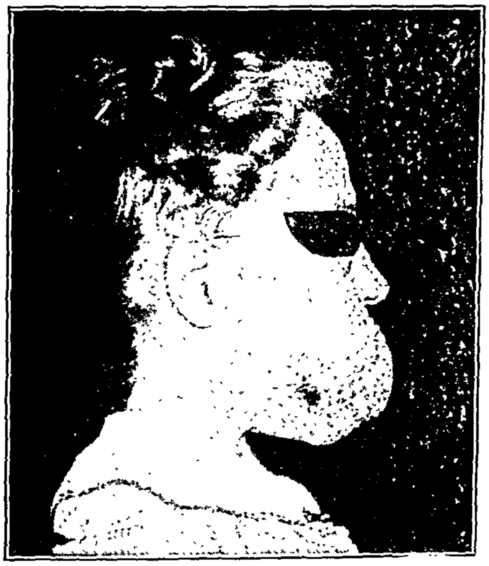
Fig. 1 (A 89376).—Adamantinoma. Woman, aged 50. Duration of tumor, twenty-one years.

Twenty-six cystic odontomas are herein reported from the Mayo Clinic. Twelve of these are simple cysts of Type A; six are of Type B, and eight are adamantinomas.

SIMPLE CYSTS OF TYPE A

The simple cysts (Type A) are the most common cysts of the jaws. Because of their little surgical importance, they have not received the attention which has been given to other cystic odontomas. Magitot[1] in 1872 published the first important work on the subject of cystic odontomas, and attributed their origin to the development of the embryonic dental tissue. Malassez[2] in 1885 found masses of cells about the roots of teeth in the jaws of adults and concluded that these were the remains of the dental ridge, the epithelial cord and the outer layer of the enamel-organ. These cells may be found near the teeth and are sometimes found deep in the jaws. Malessez called these masses of cells *débris épithéliaux dentaires,* and proposed the theory that all cystic odontomas were derived from this group of cells. This theory is the one most commonly accepted.

According to Scudder,[3] this type of cyst is found more commonly in the upper jaw in the incisor and bicuspid regions. Of the twelve cysts of this series, six occurred in the upper jaw and six in the lower. Of those in the upper jaw, four occurred in the incisor region, one in the bicuspid region, and in one case the location was not noted. In the lower jaw, three occurred in the incisor region, two in the bicuspid region, and one in the molar region.

The typical mammalian dentition consists of forty-four teeth, and man has but thirty-two, a third incisor, a third bicuspid and a fourth molar being missing. The most frequent location for the appearance of supernumerary teeth is in the upper jaw in the incisor and bicuspid regions. Whether these teeth are a reversion to the earlier types in the mammalian dentition or simply mishappenings is a questionable point among those who have made a thorough study of the subject. It is interesting to note that this type of cyst and the supernumerary teeth most frequently occur in the same location, which might suggest that these cysts are derived from supernumerary anlagen.

The theory has been held for some time that these cysts develop from irritation or stimulation. The irritating factor may be the eruption of a tooth or some form of peridental inflammation. These cysts are frequently found in connection with the dead roots of teeth and thus the irritative factor, necessary to stimulate their growth, is accounted for.

Simple cysts of Type A occur at almost any age. Of the twelve cases reported in this paper, the youngest patient was 12 years of age and the oldest 70. The cyst is usually about the size of an English walnut, but may attain great dimensions, and in the upper jaw, simulate an empyema of the antrum. In the lower jaw it may become as large as an orange. The cysts from our series varied in size from that of a cherry to that of a small lemon. Witzel[4] found tumors the size of a pea and smaller about extracted teeth. They were placed sometimes near to and sometimes distant from the root of the tooth. They contained fluid and had an epithelial lining indistinguishable from a larger cyst. The cysts have a smooth mucous membrane covering in the mouth; the wall varies in thickness and consists of a thin shell of bone (Fig. 5).

SIMPLE CYSTS OF TYPE B

Malassez[2] believes that this type of cysts also originates from cells that he describes in the jaws. Bland-Sutton,[5] however, believes that this type simply represents an expanded tooth-follicle.

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* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Magitot: Arch. gén. de méd., 1872, ii, 339.

[2] Malassez: Arch. de physiol. norm. et path., 1885, v, 129.

[3] Scudder: Tumors of the Jaw, Philadelphia, W. B. Saunders Company, 1912.

[4] Witzel: Ueber Zahnärztl Cysten, Leipsic, 1896.

[5] Bland-Sutton: Tumors Innocent and Malignant, New York, Cassell & Co., 1901.

These cysts occur in either jaw with about equal frequency and usually in the bicuspid and molar regions.

Of the six cases in our clinic, three were found in the upper and three in the lower jaw. Of the three in the upper jaw, one occurred in the bicuspid region, one in the molar region, and in one case the location was not noted in the history. Of the three in the lower jaw, one occurred in the bicuspid region, one in the anterior part of the jaw, and one in the molar region.

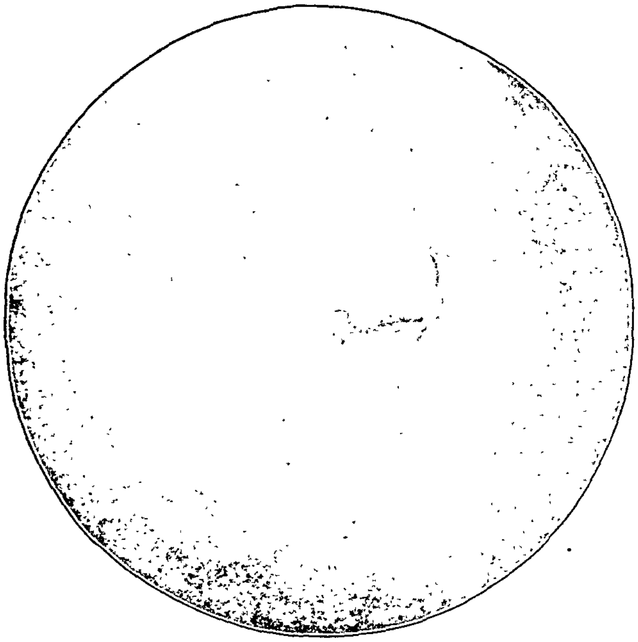

Fig. 2 (23705).—Roentgenogram of case in Figure 1, showing entire absence of ramus of jaw on right side and the tumor extending across midline to bicuspid region on left side.

This type of cysts occurs during or shortly after the second dentition, except those in connection with the third molar, which develop later in life. Although this fact is commonly known, this type of cyst may not cause symptoms or be noticed until later in adult life.

Of our cases, other than those in which the cyst occurred in the third molar region, the ages of the patients were 3, 14 and 28 years; of those in the third molar region, the ages were 27, 34 and 37 years.

It is noted that a tooth is missing from the set and a partially developed one found in the cavity of the cyst. The crown of the tooth is usually complete and the root partially formed. These cysts occur about a partially developed permanent tooth and are rarely seen about a supernumerary tooth.

In one of our cases the cyst occurred in a man 69 years of age. He had had a tumor of the lower jaw near the angle for forty-two years, and during the last six months it had increased in size and the surface had become ulcerated in the mouth. The roentgenogram showed a cyst with a partially developed molar tooth. A specimen from the growth, on microscopic examination, proved to be epithelioma. The extensiveness of the growth and the glandular involvement made the condition inoperable.

This type of cyst has similar characteristics as to size as the cysts of Type A. The wall consists of thin bone and the mucous membrane covering in the mouth is quite smooth.

ADAMANTINOMAS

The adamantinomas, on account of their greater surgical importance and their interesting features pathologically, have given rise to more study than the other types of cysts. Falkson[6] in 1879 held that, in the formation of enamel-organs for the several teeth, there was a surplus of those formed and that these additional dental germs were the origin of the adamantinomas. Malassez' theory as to their development from the epithelial masses found in the jaws is accepted by most observers. Kruse[7] agrees with Malassez as to the origin of the cysts and reports three cases, each one typifying different stages in the development of the cells of the enamel-organs. Büchtemann[8] and Kolaczek[9] believe that these tumors originate from the mucous membrane or from the mucous glands of the mouth. Bland-Sutton[5] and others hold that they are formed from the oral mucous membrane. Bland-Sutton's argument against Malassez' theory is that they occur in middle life and that if they were derived from the embryonic enamel-organ, they should occur at an earlier period in life. Hesse[10] agrees with Falkson[6] as to the origin of these tumors from a surplus of enamel-organs.

The adamantinomas are most frequently seen in the lower jaw. Lewis[11] states that they are seen eleven times more frequently in the lower than in the upper jaw. The bulk of the tumor-mass is usually at the angle of the jaw, extending upward to the ramus and forward into the body of the jaw. Sometimes the entire ramus is cystic with the tumor extending across the midline to the other side of the jaw. These tumors may originate in the molar or bicuspid regions, but are rarely seen originating from about the anterior teeth (Fig. 2).

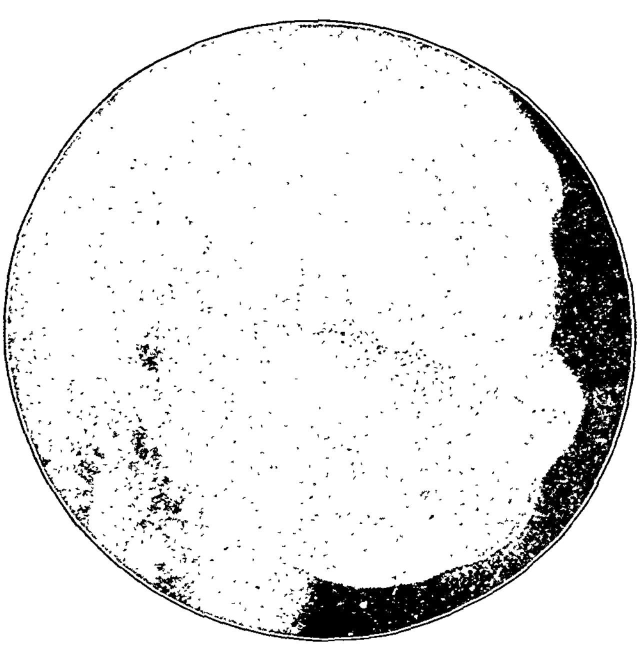

Fig. 3 (13523).—Adamantinoma in woman, aged 22. Duration of tumor, eight years. Tumor involving left half of lower jaw.

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[6] Falkson, Robert: Beitrag zur Entwicklungsgeschichte der Zahn Anlage und Kiefer-Cysten, Königsberg, p. 33.

[7] Kruse: Virchows Arch. f. path. Anat., 1891, cxxiv, 137.

[8] Büchtemann, cited by Borst: Lehre von den Geschwülsten, ii, 607.

[9] Kolaczek, cited by Borst (Footnote 8).

[10] Hesse: Deutsch. med. Wchnschr., 1912, xxxviii, 1360.

[11] Lewis: Surg., Gynec. and Obst., January, 1910, p. 28.

I have been able to collect nine cases in which the tumor occurred in the upper jaw, two from the Mayo Clinic. In only four of the cases reviewed in the literature were there definite data as to the location in the jaw. Four of the nine occurred in the posterior part of the jaw and two in the cuspid region. These cysts may originate close to the alveolar border or may start from deep within the jaw. Of the eight cases of adamantinomas from our clinic, six occurred in the lower jaw and two in the upper. Of the tumors in the lower jaw, in four the main mass was located in the angle of the jaw, in one in the molar region, and in one in the bicuspid region. Of those in the upper jaw, one occurred well back in the molar region and one in the cuspid region (Fig. 1).

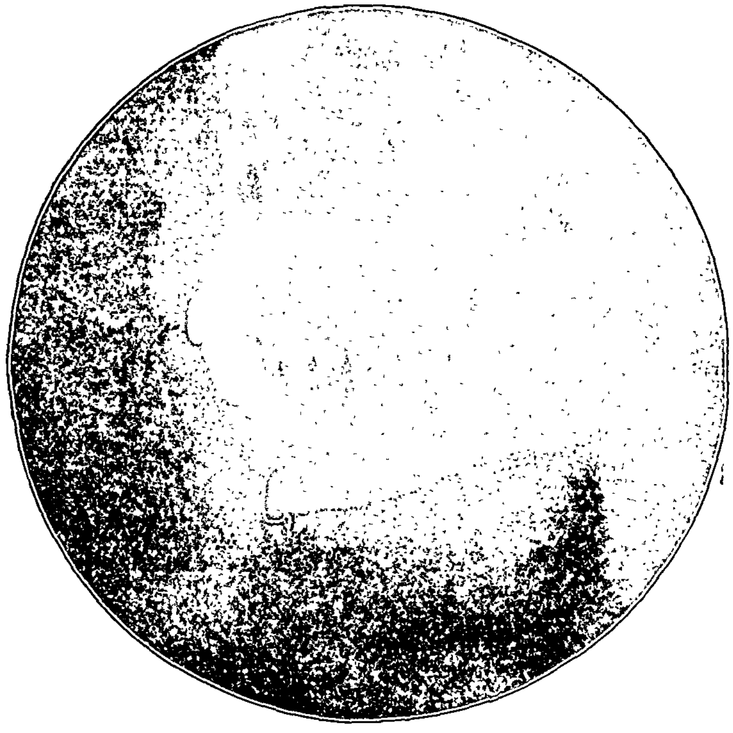

Fig. 4 (13523).—Same case as Figure 3, showing transplanted rib in place after resection of tumor by Dr. Judd. Transplant healed nicely.

These cysts may develop at any age. Massin[12] reports a case in a new-born infant and cases have been reported late in adult life. Lewis[11] states that the average age of the patients in the seventy cases which he collected in the literature was 33. The average age of the patients in our group of cases is 27¼ years. Of the six cases from the literature in which the tumor occurred in the upper jaw, the average age of the patients with occurrence in the molar region was 33½ years, and of those with occurrence in the cuspid region, 16½ years.

Stumpf[13] says that if either of the theories which have been advanced for the etiology of the formation of these cysts is accepted, one must assume some additional irritant factor as necessary in their production. The lower molar region receives more irritation than any other locality in the mouth. It is an accepted fact that the lower third molar is more difficult to erupt and more frequently impacted than any other tooth in the mouth. It is interesting to note that it is in this region and at the average age of 33 years during or just at the time of the eruption of the lower third molar that these cysts occur; and, also, that of the cases in the literature in which the upper jaw was affected, the average age of the patients having adamantinomas in the molar region was 33½ years, while that of patients with involvement of the cuspid region was 16½ years. This suggests that the eruption of the teeth may play an important part in the chronic irritation which is probably necessary to stimulate the growth of these tumors. If these conditions develop from supernumerary anlagen, the different locations in the molar region may be explained by the fact that, according to Black,[14] the supernumerary molar tooth may occur in any location posterior to the first molar. The adamantinomas are sometimes associated with cysts containing partially formed teeth, but not frequently enough to make this a factor in the etiology.

It is difficult to obtain conclusive evidence of the association of the eruption and impaction of teeth to adamantinomas, as most histories are not of sufficient detail on this point. Hesse[10] in 1912 reported a case in which a lower third molar was found in connection with an adamantinoma, and believes that from a study of this case he will be able to find out more about these tumors. Two of the adamantinomas in our clinic were associated with unerupted third molars, one in the upper and one in the lower jaw.

Of the seventy cases that Lewis collected from the literature, the average duration of symptoms was eight and one-half years. The duration of the symptoms in our cases was from ten months to twenty-one years. Most of the cases were of more than ten years' duration; but the exact duration of these tumors is difficult to determine on account of the long standing of the condition.

None of the cases reported in this paper had any glandular enlargement.

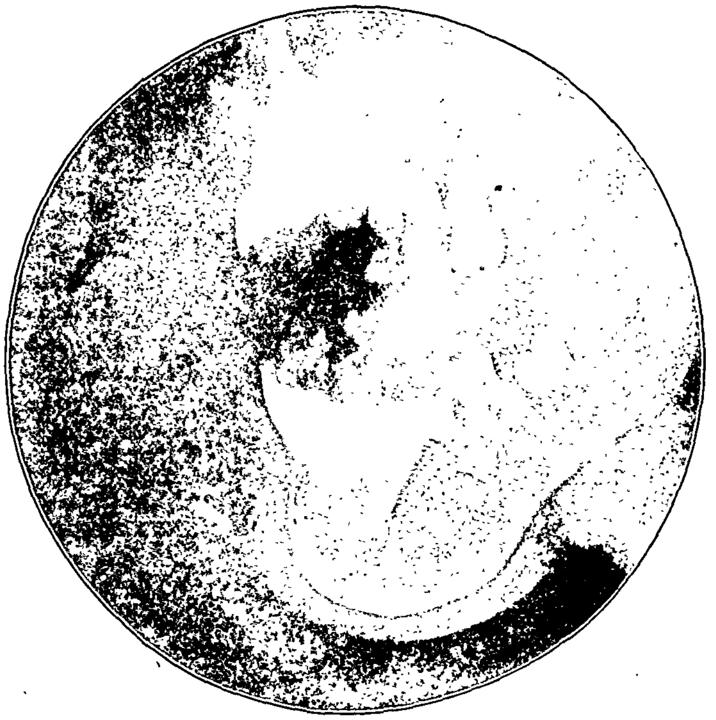

Fig. 5 (12017).—Girl, aged 10. Duration, four months. Simple cyst, Type A, involving anterior of lower jaw.

These tumors present a smooth mucous membrane in the mouth unless they are infected. The wall of the cyst consists of a thin layer of bone. Crackling may be elicited in some areas, on pressure, where the bone is thin, and fluctuation may be found in others. These tumors may give rise to great pain when they are of large size, because of pressure of enclosed fluid. One of our patients, who had had a tumor for twenty-one years, for some years, in order to relieve the pain, tapped the cyst herself, as the fluid accumulated, by means of a sterilized hat-pin.

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[12] Massin: Virchows Arch. f. path. Anat., 1894, cxxxvi, 328.
[13] Stumpf: Centralbl. f. allg. Path. u. path. Anat., 1910, xxi, p. 393.
[14] Black: Dental Summary, 1909, xxix, 1, 83.

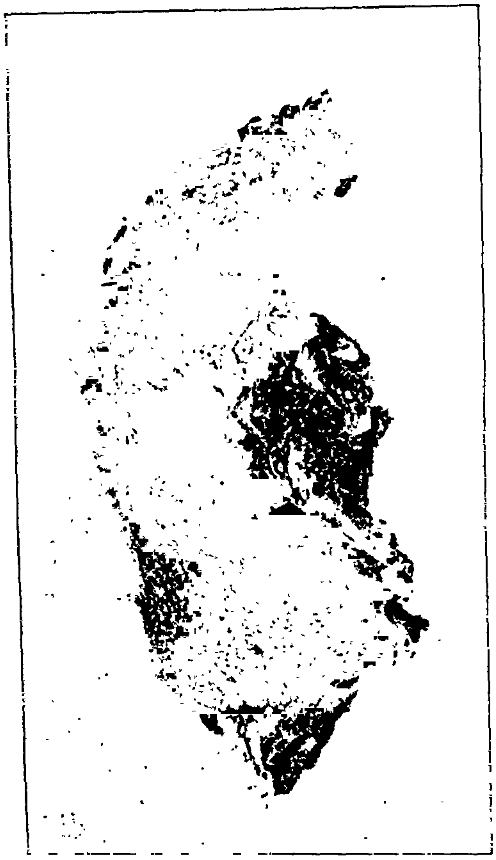

Fig. 6 (A 59772).—Adamantinoma. Gross specimen.

PATHOLOGY

The lining of the simple cyst, Type A, consists of a layer of fibrous tissue and a thin layer of flattened epithelial cells. In the older cysts the latter layer may not be present, owing probably to the pressure of the enclosed fluid. Barrie[15] in 1905 reported a case of dentigerous cyst which was probably a simple cyst, Type A, with typical adamantine epithelium, with no down-growth, lining the cyst. This was the first case reported with this type of epithelium forming the wall of the cyst.

The lining of the simple cyst, Type B, consists of a fibrous tissue layer. Some observers have reported an epithelial lining for this type of cyst also.

The adamantinomas on section present solid and cystic areas. The cystic areas vary in size from that of the head of a pin to that of an English walnut. They appear to have a smooth lining, and fibrous or bony septa are seen separating the various cysts. The cysts contain a thin yellowish fluid. The solid areas have a red tint and present a granular appearance, owing to the many minute cysts.

Microscopically, the solid areas consist of a fibrous tissue stroma and columns of epithelial cells. These columns may be elongated, rounded or arranged in the form of acini, and may present many irregular forms. Two types of epithelial cells are found in these cell columns: the typical columnar cell with the nucleus placed near the pole away from the stroma, and the differentiated cells from this type—the polygonal cell and a stellate cell which form the main mass of the epithelial columns. These cells are analogous to the cells that form the enamel-organ. Areas of transitional forms from the solid cords to the small cysts are seen. The stellate cells are seen undergoing disintegration and their place being taken by cyst-cavities, at first quite small and then becoming larger. Stellate cells gradually disappear and are replaced by the fluid of the cyst. As the cyst increases in size, the columnar cells are alone left to line the cyst, while in the yet larger cysts these have disappeared and the wall consists of fibrous tissue only (Figs. 6, 7, 8, 9, 10 and 11).

DIAGNOSIS AND TREATMENT

The diagnosis of the cystic odontomas, when the facts already noted are considered and with the aid of the roentgenogram, is usually not difficult. The roentgenogram will show a partially developed tooth, a unilocular cyst or the septa in the multilocular variety. The differential diagnosis from a giant-cell sarcoma is usually the most difficult, and this has frequently to be made at the time of operation or by microscopic examination.

The treatment of the cysts of the first group requires only a thorough curetting of the wall and packing the cavity with gauze. In the larger type, resection may be required to extirpate the tumor. The adamantinomas, however, require more radical treatment since the simple curetting of the cyst does not permanently cure the condition if a small area of the tumor is left. In time the condition recurs. A resection of the jaw should be made, if possible; in this way all the tissue of the tumor may be removed. Different appliances have been used, including metal splints to hold the fragments of the jaw in position after resec-

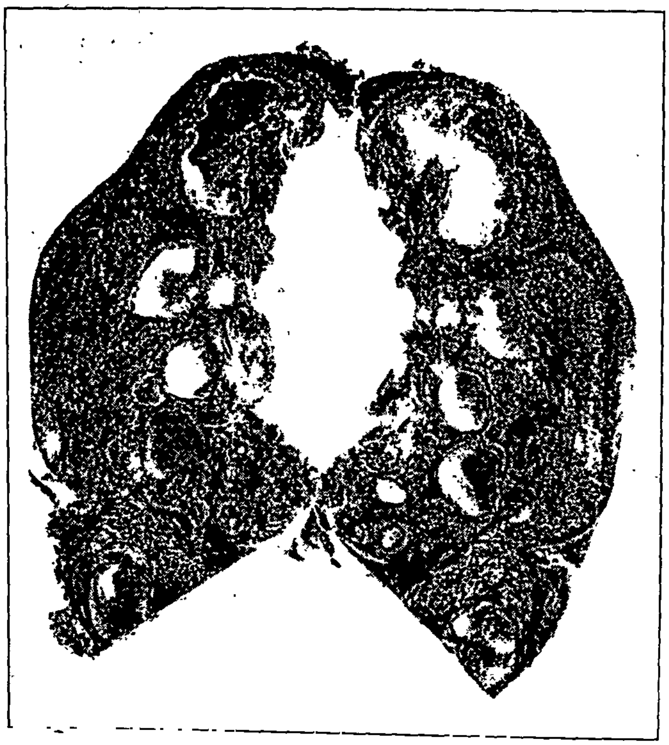

Fig. 7 (A 59772).—Adamantinoma. Cross-section, showing the solid areas of the tumors and the small and large cysts with bony walls.

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15. Barrie: Ann. Surg., September, 1905, p. 352.

tion, but the transplantation of a portion of rib seems to be the most satisfactory (Figs. 3 and 4.)

Recurrences are frequently noted in these tumors, especially when the treatment has been conservative. Bloodgood[16] reports twelve cases of adamantinomas. One case was inoperable, and in eleven cases resection of the jaw was done. Nine of these patients were well from one to twelve years. There was one recurrence after the patient had been well for eight years. One died following excision of a huge tumor involving both sides of the upper jaw.

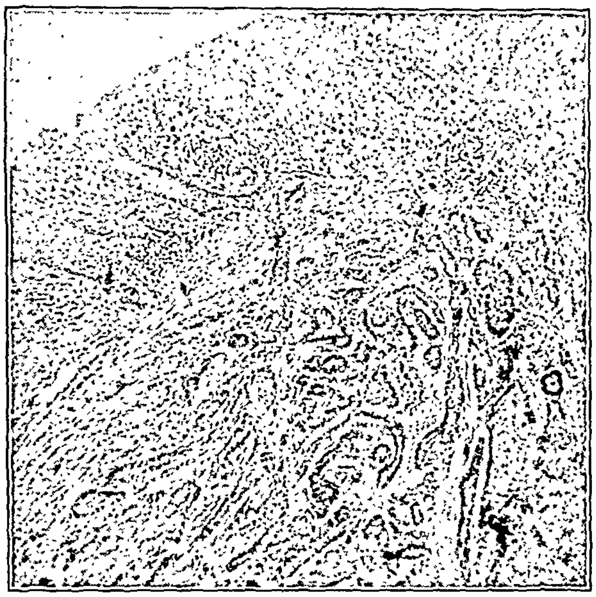

Fig. 8 (A 68435).—Adamantinoma. Down-growth of the columns of epithelial cells and the various forms these take, surrounded by connective-tissue stroma.

Of the eight cases reported from our clinic, all of the patients have been operated on within the last two and one-half years, so that the final results cannot be given. One patient died of heart-trouble eight months after the operation, and two have been operated on within the last six months. In one case the tumor recurred, but the patient has now been well more than two years; one recurred after two years and the patient has been reoperated on for the recurrence within the last six months. In one case, on account of the extensiveness of the tumor and the fact that the cyst had fibrous walls which involved the entire half of the jaw and the ramus and extended across the midline, resection was impossible. The tumor was opened and the cysts curetted. Several small cysts have appeared since the operation. Two patients have had no recurrence; one case is of eighteen months' standing and one of two years'.

ABSTRACT OF DISCUSSION

Dr. F. B. Moorehead, Chicago: The classification Dr. New suggests is not entirely satisfactory. Until we know more about their pathology, we are not likely to have a scientific classification of these jaw cysts. In the types which Dr. New classifies as Class A and Class B, the questions are whether one originates from embryonic remains and whether the other is due to irritants, as infection through tooth roots, etc. There is also a question of the histology of these two types of cysts, whether one contains an epithelial lining and the other does not. Some men believe that the cyst due to infection does not contain any epithelial cells, while the other type of cysts does. It is difficult to get a good specimen for examination from the infection type of cyst for two reasons: first, these cysts are usually the seat of a secondary infection, and the epithelial lining is frequently destroyed; secondly, the cyst-wall may be very thin and may be badly torn when removed, so that a good specimen is difficult to obtain. In an uncomplicated infection cyst we find a characteristic straw-colored stringy fluid, which contains cholesterin, showing that there has been cell degeneration. I am certain that these cysts, which are infective in origin, do contain epithelial cells, and that when one is fortunate enough to get a good section he will find a definite epithelial lining. From the clinical side, there are two things to be borne in mind in dealing with these cysts: first, they may encroach on the inferior dental nerve in the lower jaw, in the upper jaw on the maxillary sinus. The bone is destroyed in all these cases by pressure apathy. One, therefore, must bear in mind the fact that in operating on these cysts in the upper jaw, he is quite likely to get into the maxillary sinus, or even the nasal sinus, and also into the inferior dental canal in the lower jaw. In many cases the inferior dental nerve is entirely destroyed and analgesia of the tooth-supply of this branch may persist for a long period of time. In removing these cysts one should remove a sufficient amount of the external wall to restore the normal contour to the parts and no more. Whether there has been a bulging of the walls on either the upper or lower jaw, the wall should be removed down to a point where the normal contour is restored.

Dr. T. L. Gilmer, Chicago: A better classification of cysts of the jaw is desirable; still we should be a little slow in making radical changes until we know more of their pathology and also the histology of the elements which make up such cysts. The origin of dentigerous cysts is certainly quite different from that of the other class of cysts designated as infection cysts. Eve expressed the opinion that multilocular cysts were due to inclusion of the epiblast by the mesoblast. It seems reasonable to suppose that persistent embryonic epithelial remains of the enamel-organ cord may be stimulated by infection and cause it to proliferate, resulting in the so-called infection cysts which undoubtedly are associated with infected teeth. I am not sure that such cysts should be designated as infection cysts; they are caused by infection in the jaws about the roots of teeth, but are not necessarily infected at first, but may become so afterward. I have made microscopic examination of the lining of the walls of these cysts and found in some of them epithelial cells. In others, in which there has been much thinning of the walls of the

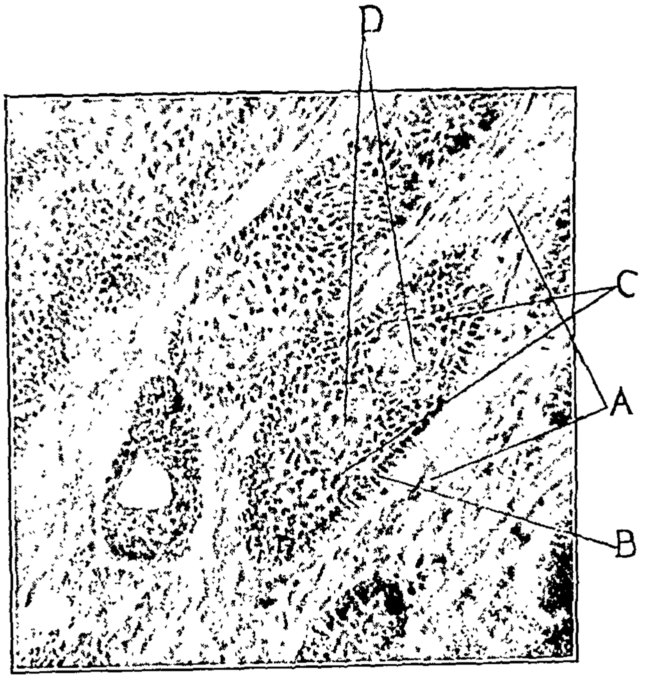

Fig. 9 (A 68435).—*A*, connective-tissue stroma; *B*, columnar epithelium; *C* and *D*, differential cells. *B*, *C* and *D* are analogous to the cells of the enamel-organs.

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[16] Bloodgood, J. C.: Bone Cysts, The Journal A. M. A., Oct. 15, 1904, p. 1124.

cyst from long standing, the epithelium is seemingly lost. Concerning the surgical treatment for cure in the cases spoken of by Dr. New, in which he recommended resection of the jaw, I believe that I can judge very certainly by a good view of the bone, whether I have gotten beyond the area involved. I doubt if we should ever make exsection of the mandible except in positively malignant growths involving the whole thickness of the mandible. If even a little bone can be left to support the jaw it will prevent the terrible disfigurement of the patient which results from complete separation of the jaw. If the case is carefully watched the more radical operation may be done if there is indication of recurrence. I feel that we are justified in this method except in the most malignant cases.

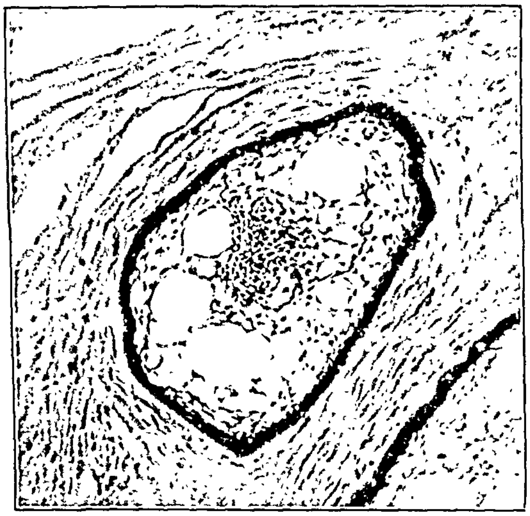

Fig. 10 (A 59772).—Adamantinoma. Early cyst formation by the disintegration of the differentiated cells.

Dr. M. I. Schamberg, New York: I have two pictures, one showing enlargement of the mandible from the cuspid region back toward the ramus; the second showing a tremendous destruction of the jaw similar to that described by Dr. Moorehead. In this case we operated after the method condemned by Dr. Moorehead and the result can best be determined by the roentgenogram, which was made a year and a half after the operation and shows complete regeneration of the bone throughout its entire extent. These cases I have endeavored to follow up in every instance so as to know definitely the results obtained. The method of procedure was to make an incision along the upper border of the alveolar plate, after taking out the involved teeth. We allowed the third molar to remain as a possible abutment for bridgework later. After dissecting the mucous membrane away along the buccal side and cutting away a thin layer of the bone about the lower border so as to get access to the entire cystic cavity, the whole was removed *en masse* and by microscopic examination we found it contained epithelial cells. The cavity was then packed with iodoform gauze until the cavity filled with granulation tissue which has since been replaced by bone structure. That is the method that I employ in almost all of these cases.

In a case of multilocular cyst Dr. Jerrigan, the surgeon, contemplated exsection of the jaw. When I saw the patient I advocated the operation which I performed of making an incision along the lower border of the jaw, starting at the lobe of the ear and carrying it along the lower border to a certain point. This patient was a prominent man in his town, and felt that the loss of his jaw would prove a serious handicap, and I am sure that the recovery in this case will be as permanent and as satisfactory as in the other case. The roentgenograms are a most important step in the diagnosis and prognosis of the cases and as an aid in outlining the operation necessary.

Dr. Theodore Blum, New York: With regard to operations for cysts, Dr. Schamberg did not mention that he is performing a special operation in the upper jaw. This operation is what is known as Jones' operation. In contrast to the other operations mentioned this does not involve the removal of the entire cyst wall but only its outer portion. Instead of opening and removing the cyst wall entirely and then allowing the wound to heal by granulation, only the major part of the outer wall of the cyst is removed. First, an incision is made, low instead of high, because it gives better access to the cavity. A good portion of the outer wall should be taken away so as to flatten out the cavity as much as possible. The teeth have been taken care of, the flap above and the one below are turned in and either retained by gauze packing or sutured at both points. It only takes three or four days for the mucous membrane of the mouth to unite, and we can discharge the patient with instructions as to cleaning the mouth with a syringe. This is a valuable operation in hospital work because the patient can be dismissed for weeks. This operation is frequently performed by Dr. Partsch of Germany, who is an authority on this subject. In the case of large cysts when there is danger of fracture, Dr. Partsch advises that, before operating, an appliance be put in the mouth consisting of a sliding joint, and in case of a subsequent fracture the fractured parts are held in place on each side of the jaw.

Dr. C. K. Teter, Cleveland: In following up cases and operations, this is one of the most satisfactory operations we can accomplish because of the unlikelihood of recurrence. A few cases will bear out Dr. Schamberg's idea that the bone will regenerate on the lower jaw. In one case, in a young man 18 years of age with an enormous cyst on the right side of the maxilla which extended from the angle of the jaw to the lower border of the first bicuspid tooth, the cyst involved not only the third but also the second molar. An incision was made near the ridge of the jaw and it was comparatively easy to remove the outer wall of the cyst together with the fibrous socket which came out practically *en masse*. Eight months afterward a roentgenogram was taken and showed a practically reformed mandible, which was very gratifying to the patient as well as to me.

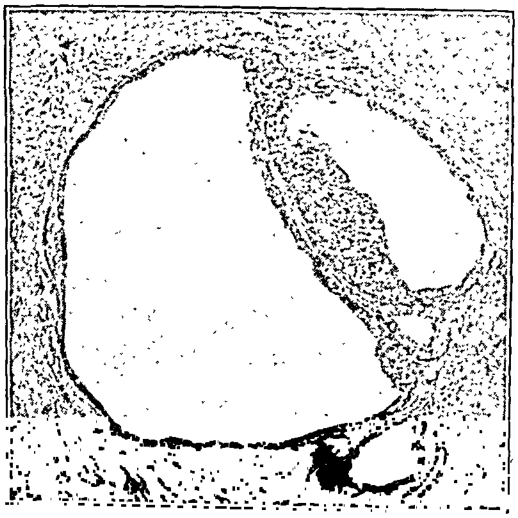

Fig. 11 (A 68435).—More advanced stage in formation of a cyst. Very few differentiated cells are left. The cyst is lined by a layer of columnar cells.

In another case a multilocular cyst in the region of the upper first and second bicuspid about the size of an English walnut, contained, besides fluid, twenty-four small pieces of illy formed cementum and enamel about the size of grains of rice.

Preventogram.—"Self protection is the first law of nature." The willingness to protect others, as well as self, separates human-kind from the brutes.—Pittsburgh *City's Health.*

MESOTHELIAL TUMORS OF THE JAWS *

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Within the past year it has been my privilege to study, clinically and histologically, a considerable variety of mesoblastic neoplasms of the oral cavity. Most of these cases occurred in the oral surgical service of Dr. M. H. Cryer, to whom I am indebted for the opportunity of reporting them.

Most of the growths under consideration fall into that group known under the common term "epulis," a name meaning from its derivation anything on the gum. An epulis may be described as a circumscribed connective-tissue growth from the alveolar ridge, which is covered over by the normal mucous membrane, except as the latter may undergo secondary ulceration due to pressure necrosis, infection, etc. (Occasionally, growths clinically classified as epulis may be found to be epithelial in nature, for example, papilloma, epithelioma, etc., but these will not be considered here.) Under this broad heading, therefore, many clinical and pathologic varieties of mesoblastic tumor may be included.

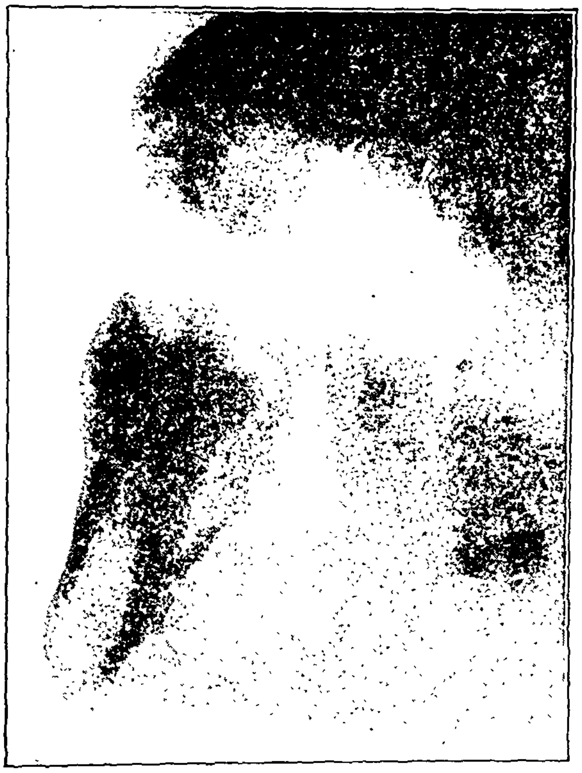

Fig. 1.—Roentgenogram showing giant-cell myeloma. (Cryer.)

The most obvious clinical characteristics of an epulis and those which give the most reliable information as to its pathologic nature are (a) consistency, and (b) rate of growth. Thus we have the hard epulis and the soft epulis. The hardness is in the new tissue itself. In the soft variety there may be a hard shell of bone covering a portion of the tumor, but the tumor tissue itself is soft. The hard variety of epulis is nearly always very slow in growth, and alters in size but little in months or even years. There is usually quite a sudden line of demarcation where the bulging of the new growth extends beyond the normal contour of the gum. It gives the impression of arising from the surface of the underlying alveolar process. In color, the gum tissue covering the tumor may be slightly reddened, though it generally differs but little from that of the normal gum.

The soft form of epulis on the other hand, is usually rapid in growth, often increasing greatly in size in a few weeks. The bulging beyond the normal gum-contour, in the deeper parts of the swelling at least, generally occurs gradually while one may distinctly recognize the origin of the growth as being from the interior of the bone. A portion of the tumor may be covered by a bulging shell of bone. In color, these tumors are generally a dusky red. In this variety of neoplasm, the Roentgen ray frequently shows a space in the bone as clean-cut as though it had been drilled through with a large caliber bullet (Fig. 1). Epulic growths may be sessile or slightly pedunculated, and vary in size, occupying the space of one, two, or several teeth, which are often considerably displaced or loosened.

The two clinical types of epulic tumor present marked differences in histologic appearance.

The hard variety of epulis is fibroma pure and simple. Microscopically, we see an outer layer of normal stratified squamous epithelium and submucosa, while the deeper portion of the growth consists of an interlacing network of fibrous tissue (Fig. 2). Occasionally there is evidence of myxomatous degeneration, and sometimes of bone formation. These growths spring from the periosteum lining the alveoli.

The soft epulic tumors are generally grouped pathologically under the giant-cell sarcomas or myelomas. Histologically, beneath the covering mucous membrane there is a stroma of fibrocellular tissue resembling fibrosarcoma. Scattered throughout are the giant-cells, which vary in size and have numerous nuclei grouped toward the center of the cell. Small masses of bone and cartilage may be found (Fig. 2).

There is considerable confusion as to the proper classification of these growths, the literature both surgical and pathologic presenting many divergent views. Thus Bland-Sutton[1] terms the growth a "myeloma or red-marrow tumor." Nichols[2] regards it as a "bone-marrow or medullary sarcoma." Owen[3] describes the same thing as "myeloid sarcoma." Other writers prefer to use the term "myeloma" rather than giant-cell sarcoma. The confusion is further increased by finding in works on pathology an entirely different growth described as myeloma, which contains no giant-cells whatever. Thus Mallory[4] describes the myeloma as a "tumor which arises within the bone-marrow and which is peculiarly characterized by causing the presence of albumose in the urine. . . . The cells are of medium size and irregularly spherical." Nowhere does he mention the presence of giant-cells in this growth. Mallory[5] further says that the term "giant-cell sarcoma" should be abolished. He states that at least two types of giant-cells are found in tumors, one resulting from multiple mitosis and signifying rapid growth, and the second, which is found most commonly in new growth involving bone. It is the latter type that is most frequently met in these giant-cell tumors of the jaws. Mallory looks on them as "foreign-body giant-cells, similar to the osteoclasts of normal bone, and are due to the fusion of endothelial leukocytes attracted into the tumor by the

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* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Bland-Sutton: Keen's Surgery, i, 747.
[2] Nichols: Keen's Surgery, ii, 69 and 70.
[3] Owen: Keen's Surgery, iii, 643.
[4] Mallory: Pathologic Histology, p. 338.
[5] Mallory: Pathologic Histology, p. 273.

presence chiefly of lime salts which they dissolve and remove. They signify usually disintegration of bone. . . . The tumor containing foreign-body giant-cells should be classified according to the nature of the other cells present in the tumor; the foreign-body giant-cells should be disregarded. They do not signify either rapid growth or malignancy." From clinical observation of cases showing these giant-cells, we agree with Mallory that they signify neither rapid growth nor malignancy, but would go still further and say that their presence rather tends to show that the tumor is non-malignant in most cases. For we have seen several cases, which, if the giant-cells were excluded, from the histologic appearance of the remaining tissue would have to be classified as malignant sarcomas, and yet in which simple removal of the growth itself has resulted in perfect cure. The presence of giant-cells would therefore seem to be an indication that the malignancy of the tissue has been modified in some manner, and that they thus have considerable significance from the point of view of prognosis. It is unfortunate that there is no suitable name, agreed on by all, for this frequently occurring growth.

There is, however, a tumor of the jaw rich in foreign-body giant-cells, which cannot be regarded as clinically benign. This type has recently been described for the first time by Whitman.[6] In the new type there is a proliferation of the vascular endothelial cells which extend to form the main elements of the tumor. Scattered throughout are numerous foreign-body giant-cells, a great many of which lie within the lumina of blood-vessels. Whitman concludes that myeloid or giant-cell sarcomas can be divided into two groups, the new group consisting of tumors very closely resembling the true myeloid sarcoma (that is, the form first described), but which are clearly of endothelial origin and the giant-cells of which are usually intravascular.

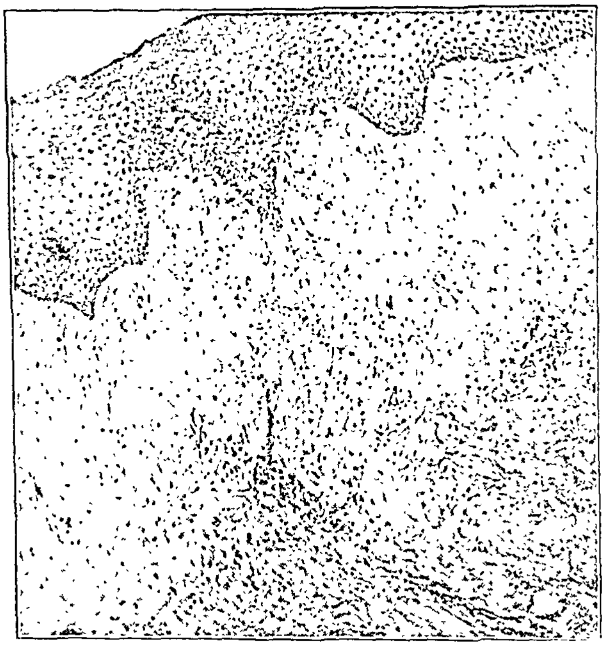

Fig. 2.—Histologic appearance of section from fibrous epulis. Note interlacing network of fibrous tissue.

We believe that the recognition of two distinct types of giant-cell myeloma is not only of pathologic interest, but is also of considerable clinical importance. I think we have all had the experience of cases in which a pathologic report of giant-cell sarcoma was rendered, and yet which pursued quite divergent clinical courses subsequently, in one case simple removal resulting in cure, in another followed by recurrence of the growth. From a study of our cases and comparison with that reported by Whitman, I believe that this clinical difference is due to difference in structure. Ordinarily, giant-cell tumors of the jaws are not to be regarded as clinically malignant, that is, they are sharply defined from the surrounding healthy tissue and shell out easily from the cavity in the bone. They produce no metastases, and do not recur after simple enucleation. Histologically and clinically, four of the cases of giant-cell tumor to be reported were of the usual type (Cases 2, 3, 4 and 5). The other case (Case 6) corresponds closely to the new type described by Whitman, and in its clinical manifestations differed markedly from those belonging to the usual form. There was an extensive growth of the upper jaw, involving the maxillary sinus, not sharply circumscribed, and which recurred several times after apparently complete excision. Microscopically (Figs. 4 and 5), the growth consisted of a proliferation of the capillary endothelial cells to form the stroma of the tumor, and numerous spaces, evidently dilated capillaries, which contained foreign-body giant-cells similar in appearance to those of the ordinary type of tumor. Whitman's case appears to be clinically similar to ours, as he states that it recurred twice after operation. These two cases, having similar clinical and histologic characteristics, form evidence that we are dealing here with a more malignant form of growth than the ordinary type of giant-cell tumor, requiring more extensive operation to ensure cure.

The unfortunate application of the term "sarcoma" to the ordinary giant-cell tumors of the jaws has led to much ruthless and unnecessary sacrifice of tissue in a part of the body in which a consideration of cosmetic results is secondary only to the life of the patient. There is no advantage in opening the face or excising half the jaw for the removal of these tumors when it is perfectly safe simply to shell out the growth from within the mouth without fear of recurrence. In the second or endothelial type, however, a more extensive operation is usually required. The nature of the growth can generally be recognized at operation, but if not, histologic examination will indicate whether or not further excision will be necessary.

REPORT OF CASES

CASE 1.—C. N., aged 37, was seen Jan. 5, 1914, with a growth on the gum of the lower jaw that he said had been there for sixteen years. It was slowly growing larger, but caused no pain. Examination showed a hard nodular swelling in the alveolar region of the lower jaw, extending from the left first premolar to the right lateral incisor tooth, several of the intervening teeth being displaced or loosened. Diagnosis: fibrous epulis. Operation consisted in extraction of teeth involved, and excision of growth and alveolar process from which it arose. Uneventful healing ensued. Histologic examination shows growth to be a fibroma (Fig. 2). There was slight evidence of myxomatous degeneration.

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[6] Whitman: Jour. Med. Research, January, 1914, p. 465.

Case 2.—A. P., woman, aged 52. Patient first seen March 14, 1913. She had had no upper teeth for twenty years or more and wears a full set of artificial teeth. For at least ten years she has had a swelling on the right side of the upper jaw which never caused any pain, but is gradually growing larger and interferes with the fit of her plate. On the right side of the maxilla in the region of the alveolar ridge there was a smooth soft dark-red growth, about 1 inch long by ½ inch wide. The tumor was excised by Dr. M. H. Cryer, without any attempt at removal of the surrounding healthy tissue. Healing occurred in due course without any recurrence or other complications. Microscopic examination showed a covering of squamous epithelium, while the interior of the growth consisted of a fibrocellular stroma containing many foreign-body giant-cells (Fig. 3). Diagnosis: Giant-cell myeloma, benign type.

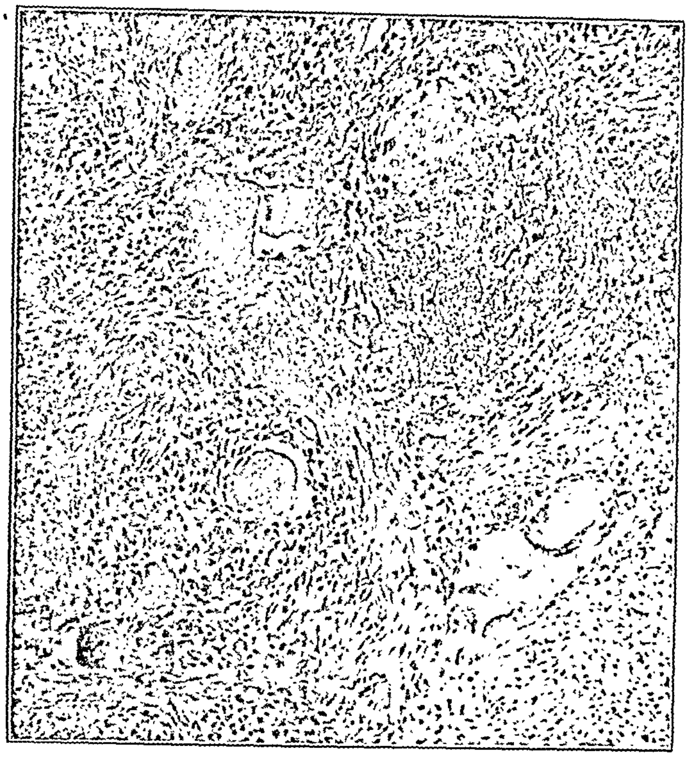

Fig. 3.—Histologic appearance of section from giant-cell myeloma, common type. Small masses of bone and cartilage seen.

Case 3.—M. W., woman, aged 22. Patient first seen Sept. 18, 1913, in association with Dr. R. H. D. Swing. For about three months she had noticed a gradually increasing painless swelling of the left side of the lower jaw, which caused displacement of teeth. Examination showed a smooth swelling of the gum on the left side of mandible extending from the first molar to the canine tooth. The teeth involved were sound but the premolars were somewhat displaced. The growth caused the internal and external alveolar plates to bulge, forming a thin shell of bone over it. The two premolar and canine teeth were removed together with their alveolar process and soft dark-red material was curetted out from the thin shell of the bone forming the body of the jaw at this point. The continuity of the bone was preserved. Slow but uneventful recovery ensued, and no signs of recurrence appeared after nine months. Several small masses of gritty material were scattered throughout the soft tissue, which proved to be small areas of bone and cartilage on microscopic examination. In other respects the tissue was similar to that found in Case 2. Diagnosis: Giant-cell myeloma, of benign type.

Case 4.—J. F., boy, aged 17. First seen Jan. 10, 1914. Patient stated that for about six weeks he had noticed, slightly to the left of the median line, a painless swelling of the lower jaw, which was increasing in size. Examination showed a spongy, non-tender growth, extending from the symphysis to the left first premolar. The growth extended upward about the necks of the teeth and below caused a bulging of the alveolar plates. The teeth were irregularly displaced by the tumor. The roentgenogram (Fig. 1) showed a light area in the alveolar process and body of the bone in the position corresponding to the growth. The operation by Dr. M. H. Cryer consisted of the removal of the teeth—from the right central incisor to the left first premolar—together with their alveolar process, and the shelling out of a mass of soft dark-red jelly-like material from the deeper portion of the bone. This tissue lay in a smooth cavity in the bone extending almost to the lower edge of the mandible, and appeared to be separated from the healthy bone by a sort of fibrous capsule. The cavity in the bone is slowly filling up, with no sign of recurrence of the growth. The tissue was histologically similar to that found in the two preceding cases. The outer portion of the tumor consisted of a condensation of the fibrocellular tissue, containing no giant-cells in this situation. Diagnosis: Giant-cell myeloma, benign type (Fig. 3).

Case 5.—R. D., boy, aged 9. Patient came to the clinic March 17, 1914, on account of a growth on the right side of the upper jaw. This growth had been noticed for about six months, and had been partially excised two or three times by a dentist, who took it for a simple hypertrophy of the gum caused by the irritation from decayed teeth. The growth was gradually increasing in size, but never caused any pain. Examination showed a dark-red, soft lobulated mass projecting from the right upper alveolar process at a position corresponding to the premolar teeth. The temporary molar teeth at this position had been lost, while the premolars were only partially erupted and covered by the growth. Operation March 20 by Dr. Cryer consisted in excision of the tumor, extraction of the two premolar teeth, and slight curetting of the underlying alveolar process. Uneventful recovery followed. Microscopic examination showed the tumor to be a giant-cell myeloma of the benign type.

Case 6.—W. T., man, aged 29. Patient was first seen Dec. 2, 1913, with a swelling of the right side of the upper jaw that he had noticed for about six months. He complained of practically no pain, but several teeth had loosened and been lost. Examination showed a dark-red enlargement of the right side of the upper jaw extending from the region of the canine to the second molar tooth. The growth was smooth, was not confined to the alveolar process, but caused a bulging over the hard palate almost to the median line. Operation by Dr. Cryer consisted in removal of the growth and bone from which it arose, through the mouth without opening the face. The tumor was found to extend into the maxillary sinus, which was curetted and packed. Micro-

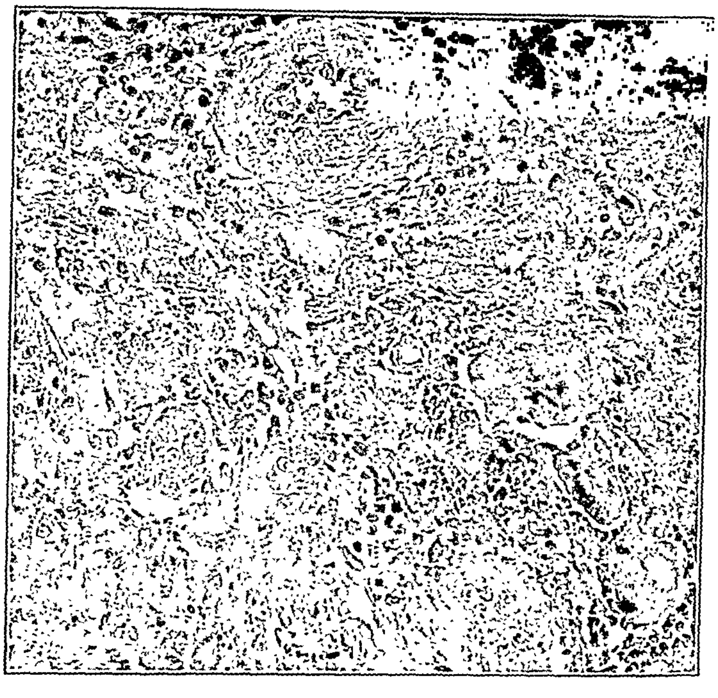

Fig. 4.—Section from giant-cell myeloma, endothelial type, showing proliferation of endothelial cells.

scopically the tumor was found to be a giant-cell endothelioma (Fig. 4) similar to that described by Whitman (see above). Feb. 23, 1914, a second operation became necessary owing to recurrence in the maxillary sinus and toward the median line of the palate. This was also performed without opening the face, a considerable portion of the palatal process of the maxilla being cut away, so that an opening was made in the hard palate between the mouth and the nose. Two weeks later a third small operation became necessary owing to a slight recurrence in the region of the maxillary tuberosity. At present the patient is apparently cured, and a prosthetic appliance will be made to close the defect in the palate caused by the operation.

SUMMARY

1. Epulic tumors may be classified as hard or fibrous, and soft or giant-cell.

2. The giant-cell tumors of the jaw bones fall into the two distinct classes: (*a*) the ordinary so-called giant-cell or myeloid sarcoma; (*b*) the giant-cell endothelioma, recently described by Whitman.

3. Tumors belonging to Type *a* have all the clinical characteristics of and may be regarded as benign tumors, and require only local removal of the new growth itself as in the case of other benign growths.

4. Tumors belonging to Type *b* are more malignant and should be treated accordingly by more extensive operation.

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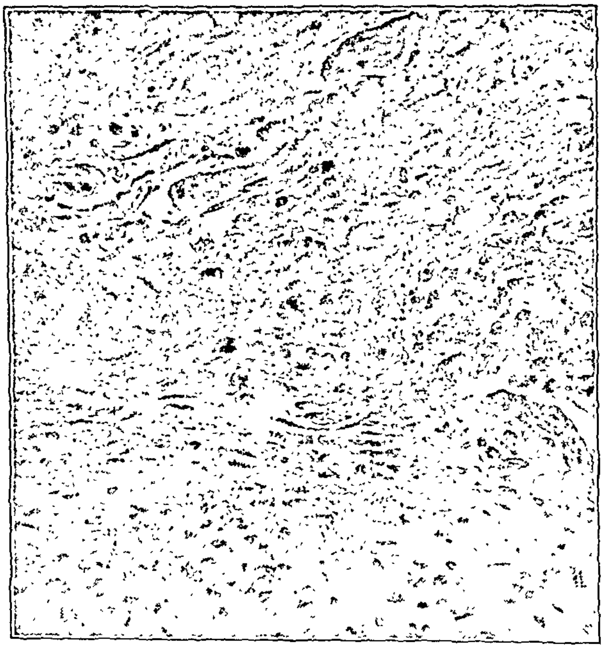

Fig. 5.—Section from giant-cell myeloma, endothelial type.

ABSTRACT OF DISCUSSION

Dr. R. P. Bay, Baltimore: I shall, in speaking of endothelial tumors, consider them not as epuli of the mouth, but as sarcomas. Some authors classify these tumors of the epulis variety as benign tumors which are histologically malignant; in other words, a sarcoma which is histologically malignant and yet benign clinically. As Dr. Ivy said, some cases of epulis and sarcoma around the gum are benign and some malignant; some shell out easily without much disfigurement or difficulty. In my experience it is impossible to apply any hard and fast rule in these cases. We consider, and probably we are right, that the older the individual the better the prognosis in cases of sarcoma occurring around the mouth, the same as we have in epithelioma and carcinoma. I have seen cases of sarcoma or epulis, and we may even see endothelial tumors occur practically at all ages from the infant to the advanced age of 68. We know absolutely nothing, so far as I know, of the cause of sarcoma or mesothelial tumors. It was once thought they were congenital. The most rapidly growing and the mostt advanced case I have had under observation was a case of giant-cell sarcoma which the pathologist thought was a typical simple epulis, occurring in a child 10 years of age. It was removed by methods that would be accepted as probably more extensive than ordinarily required, but it recurred very rapidly and in six or eight months a complete resection of the jaw was necessary. That was, according to our knowledge of the pathology of these cases, the variety that shells out very easily, though this case was a typical case of giant-cell sarcoma. The epulis occurring in old people usually starts from some irritation. They practically always start, I believe, from the periosteum coming out directly from between the teeth. It is useless to shell out these epuli without removing at least one or two teeth, or at least the tooth they are attached to. I assert that those who are teaching oral surgery and who come in contact with students, should advocate the complete and early removal of tumors and lumps of whatever character occurring around the gum. They can be, of course, innocent, and possibly the majority are, but they certainly can be as malignant or more so than any with which we have to deal. So that we should advocate the early removal of all growths coming from around the gum when the periosteum is injured or from some other cause. I believe also that after we remove the growth with the knife, the tissues should be cauterized with the electric cautery.

Dr. Virgil Loeb, St. Louis: How does Dr. Ivy classify the epuli which he calls typical angio-epithelioma?

Dr. M. I. Schamberg, New York: We frequently hear of radical operations being performed for so-called malignant growths about the mouth, and it has been my experience that these giant-cell sarcomas are in a measure inflammatory growths; they really assume the form of inflammatory tissue. In fact Dr. Bloodgood of Johns Hopkins has expressed a similar opinion with regard to the giant-cell variety of sarcoma. For that reason I am sorry that Dr. Ivy did not take up the subject from the etiologic point of view. These sarcomas are usually completely cured by simple removal. My experience conforms with that of those who have encountered these cases. I have run across few cases of giant-cell sarcoma that involved the maxillary sinus and which required further operation. I recently operated on one which appeared to involve the anterior wall of the antrum and caused the face to be quite prominent as high as the inner canthus of the eye, and after the operation there was quite a bit of surgical traumatic thickening of the periosteum which led me to believe I was going to have a recurrence. In that particular case the patient had been wearing some unhygenic bridgework in the mouth, with a cuspid tooth involved which I thought was the cause of this growth. After the removal of the tooth and the surrounding tissues by means of the curet followed by cauterization and packing the wound, the condition has completely subsided. Another feature of that case which led me to believe that it was largely inflammatory in origin, though under the microscope it showed the typical appearance of the giant-cell sarcoma, was that there were periodic swellings of the eye, with edema after the operation, which would give a clinical appearance of inflammatory growth. I believe, with Dr. Bloodgood, that these cases are of possible inflammatory origin and that these giant cells occur as the result of some form of chronic irritation. We know, too, that the true epulic growths occurring in and about the mouth, that spring from the periosteum, are inflammatory in origin, and are either produced by irritation of the teeth or by motion between two closely approximating teeth. The etiology of these growths is of great importance as it tends to bear out the clinical findings. I might also refer to a multilocular cyst of the jaw which was extensive, extending into the neck of the condyle of the jaw and in which almost the entire half of the jaw was involved, which I operated on some years ago, which under the microscope was thought to be malignant, but clinically the case ran a benign course. It became a very extensive growth with no involvement of the adjacent lymphatic glands, nor has there been any systemic effect, though the growth had assumed large proportions. In that case there has been almost complete regeneration of the side of the jaw and ramus.

Dr. F. B. Moorehead, Chicago: Histogenetically, there are three distinct varieties of fibroma found in the mouth—from the gum, from the periosteum and from the peridental membrane. The difficult feature is to determine the parent cell and be guided entirely by that in the removal of these growths. There are some sharply defined clinical characteristics that will lead to a conclusion as to whether they come from connective tissue in the gum, in the peridental membrane or in the periosteum. It is perfectly obvious that, if the fibroma has originated in the peridental membrane, the simple enucleation, so-called, is going to fail and the removal of the tooth in that case is always indicated. If, on the other hand, it originates in the periosteum, then an incision down to and including the periosteum is all that is necessary. This is an important point. One striking thing about this whole mesothelial group is that the malignancy has a definite relation to the size of the element. The smaller the element, the more malignant, and when we have the small round-cell type it is an extremely malignant form. Some run a benign course throughout, while others are malignant from the beginning. Others begin as benign tumors and later degenerate into malignant tumors. We should look with suspicion, therefore, on all connective-tissue growths found in the mouth. I wish we might get away from the term "epulis." It means nothing and is frequently misleading.

Dr. C. K. Teter, Cleveland: One important point is the accuracy of the report from the pathologist. Anybody doing much of this work gets into deep water sometimes if he accepts the report of the pathologist as final and carries out his work along that line, as two cases I will speak of will show. One case which occurred about eight years ago was that of a small tumor on the side of the upper jaw, located near the upper third molar, and which turned out to be a fibroma. After the tumor was taken out, which was easily done, it was sent to the pathologist and the report came back to me that it was a giant-cell sarcoma. I felt it my duty to notify these people and to tell them that a far more radical operation should be done. They did not see fit to have the operation, and eight years have elapsed without a recurrence. That family has been quite indignant with me because I suggested a radical operation. Two years ago, I had an old gentleman over 80, who had a growth in his upper jaw which entirely filled the antrum and which shelled out easily. It was a spongy growth. I sent it to the pathologist and the report came back to me that it was a simple papilloma. I did not think anything further was necessary if that was the case, as the tumor came out practically intact. This man died from a sarcoma in about three months. I simply call attention to the fact that it is important to have an accurate pathologic examination.

Dr. T. L. Gilmer, Chicago: I would second Dr. Moorehead's remarks relative to the name, epulis. It is misleading and conveys a wrong impression, since the growths under consideration do not spring from the gum, as would be indicated by the name. I believe, with Dr. Schamberg, that the so-called epulis arises from irritations in most instances. If we examine the teeth closely, which these tumors approximate, a bit of calculus or a sharp edge on a broken or decayed tooth or root is generally found, or there are pockets about the teeth in which food or other debris has lodged. Those growths, sometimes called epulis, originating within the bone, are of a different origin and are more likely to be malignant. I have noticed that the tumors under discussion are malignant in proportion as they grow rapidly or slowly, those growing the most rapidly being the most malignant. Tumors of slow growth having the appearance of a fibroma, are most likely to be, histologically, giant-cell sarcomas. If they grow quickly and are soft and more vascular, they are more likely a different type of sarcoma, that is of the spindle or round-cell variety and are always malignant, while the giant-cell type is not usually so. With regard to radical operations for the removal of these growths, I read a paper some years ago in this section relative to radical operations for removal of tumors of the mandible. My belief was, and still is, that unless there is positive evidence microscopically that a tumor of the mandible is a rapidly growing malignant growth, a less radical operation should be first done and the case watched, rather than to sacrifice a large section of the jaw, which in the past has been done too frequently. I would not, however, simply snip off the growth, I would cut away all bone up to what appears to be immune area.

Dr. John S. Marshall, Berkeley, Cal.: I have been much edified by the discussion of this subject. I remember when a paper of this character would have fallen flat before a dental society; it would not have been discussed at all because nobody would have been capable of discussing it, but now more than half a dozen young men are capable of discussing this question in all of its aspects. This is particularly gratifying to me because I feel that I have had some little part in stimulating the young men to take up the subject of oral surgery. In my teaching work I have endeavored to impress on the minds of the young dentists in my classes that this was their particular field and should not be turned over to the general surgeon. Most of our young men have been afraid to tackle these cases, largely because the schools do not give the proper training in anatomy, histology, pathology and histopathology. The schools, however, have improved very much in that line in the last few years, and I am greatly pleased to see so much interest taken in this subject in this society, because it has been the pet subject of my professional life. When I first started out to study oral surgery, thirty-five years ago, about the only man who was doing anything was Dr. Garretson of Philadelphia, who, by the way, was the Nestor of oral surgery in this country. He said, in his talk on tumors, "If you cannot easily explain the character of a tumor as being positively malignant, treat it as a malignant tumor anyway and remove it," and that has been my practice. I do not temporize with them. If I cannot explain their character, I treat them as malignant and take them out, and I know positively that I have saved many lives by doing this. The application of irritants to a carcinoma or epithelioma is much like touching a match to the material of a bonfire—they go very quickly. There is nothing that will eradicate them so well and so surely as the knife, provided the operation is made before the glandular structures have become involved.

Dr. R. H. Ivy, Philadelphia: With regard to the etiology of these tumors, I have seen cases in which there was no indication of any inflammation or irritation, and others, on the other hand, which presented marked signs of inflammatory irritation, so that we cannot say definitely that these growths are stimulated by inflammatory conditions. In speaking of "shelling out" the tumors in treatment, I do not mean to avoid extracting teeth or removing bone from which the tumors may spring; I mean to extract the teeth involved, then simply enucleate the tumor itself, taking away as little of the good bone as possible. Again, I think we can generally diagnose the variety of the tumor by whether it is hard or soft. The great majority of fibromas are hard, while the giant-cell tumors are usually soft. Cases of fibroma may be found in mouths that are in a filthy condition, and I have seen the soft variety of epulis in clean mouths. In the pathologic diagnosis of these cases I believe that the surgeon or somebody connected with his clinic should follow them to the laboratory and confer with the pathologist. In that way I think there will be few mistakes and we will have few conflicting reports from the laboratory. With regard to the term angioma, in classifying tumors, it depends on the amount of vascular tissue found in them. If we find a fibroma which contains a large amount of vascular tissue we might call it an angiofibroma.

Exact Observation the Physician's Prime Essential.—There is one quality the possession of which is the supreme need of the physician, without which he is as unfit and useless as a tone-deaf musician or a color-blind painter; that is, the faculty of exact observation.—Minot.

THE RADICAL REMOVAL OF THE VERUMONTANUM

WITH NOTES ON PATHOLOGY*

A. G. RYTINA, A.B., M.D.
BALTIMORE

Since the advent of urethroscopy, diseases of the verumontanum have been of interest to the genito-urinary specialist, and a large and varied number of sexual, urinary and reflex disturbances have been described as caused by pathologic conditions in this organ. As far back as 1879, we find Grünfeldt, in the first book which appeared on urethroscopy, devoting a large chapter to diseases of the verumontanum, and discussing methods of therapy. In 1882 we find Burckhardt recommending the employment of silver nitrate and the thermocautery in combating affections of this organ. Following the appearance of these articles, we find in the literature quite a few dissertations dealing with this subject, but nothing of material advance has been made, unless it be the suggestion of some of our American authors, that perineal section and curettage of the verumontanum be employed in those cases that do not respond to the application of silver nitrate, the thermocautery, etc.

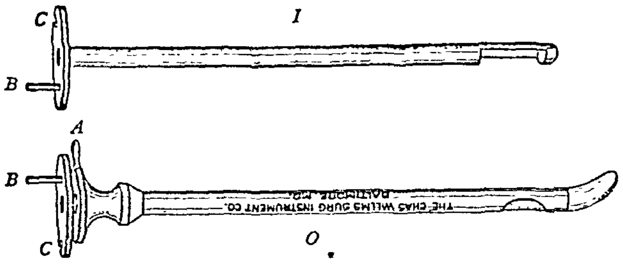

Fig. 1.—Endoscope.

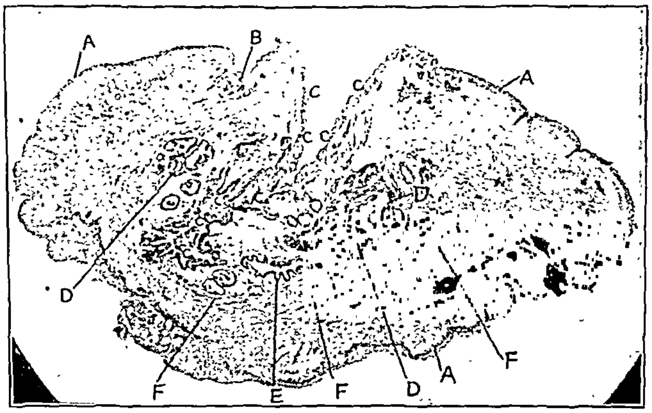

Fig. 2.—Section of normal verumontanum showing course and structure of sinus pocularis: *a*, mucous membrane; *b*, pit formation; *c*, sinus pocularis; *d*, central group of glands, some showing infoldings; *e*, duct; *f*, capsule; *g*, stroma.

As the histology and pathology of the verumonatanum has been almost an entirely neglected field, the therapeutic results obtained are based only on empiricism, and therefore liable to error. That clinical improvement often follows applications to this organ cannot be gainsaid, yet it has never been accurately determined whether the improvement is due to a psychic influence, to a specific action on the verumontanum or to the general effect on the whole posterior urethra. That many authorities believe that the favorable action is due to the application to the verumontanum itself is indicated by their dictum that the application be strictly confined to this organ. On account of the lack of scientific proof, I have never been firmly convinced of the important rôle of the diseased verumontanum in causing so many untoward symptoms, and have been surprised that such sequelae as cicatricial obliteration of the ejaculatory ducts, with resulting sterility or painful ejaculation, have not been of more frequent occurrence after the use of the thermocautery or repeated applications of strong silver nitrate. Furthermore, other complications, such as urethritis, cystitis, prostatic abscess, severe urethral hemorrhage with retention of urine, epididymitis, as well as the painfulness of the applications and the necessity of repetitions in most cases, have led me to attempt an improvement on the present mode of therapy. By means of a technic to be described presently, the verumontanum can be removed with much less risk of the complications or sequelae described above and with much less pain and reactive symptoms that ordinarily follow a silver nitrate application. Furthermore, the operation is radical, and in allowing the removal of the almost intact verumontanum, enables us to make accurate pathologic studies, with the result that a more rational interpretation of the symptomatology and therapy may be anticipated. Of course, the operation should be carried out only in selected cases.

DESCRIPTION OF TECHNIC OF OPERATION

The instrument is composed of two parts, *O* and *I* (Fig. 1). *O* is nothing but an ordinary curved posterior endoscope, having a large window on the convex surface near the beginning of the beak. The caliber is 28 F. *I* is a straight hollow tube which is also fenestrated. The edges of the latter are made of steel and well sharpened, the latter being an important particular. When *I* is introduced into *O* and the two guide-posts *A* and *B* are at right angles, the instrument is closed and *I* acts as an obturator. The instrument is introduced in the posterior urethra and *I* is rotated 180 degrees, or until the groove *C* fits into *A*. The instrument is now open. An ordinary Young's endoscopic light is now attached and the verumontanum located by pushing the instrument in or out, as the case may be. The structure is recognized by its shape, color and particularly by the opening of the sinus pocularis. In some cases it requires a little experience before one can differentiate between the verumontanum and the mucous membrane bulging in the lumen of the instrument. An application of epinephrin and cocain may now be applied, but this is not absolutely necessary. The light is now detached and the instrument rotated slightly to the patient's right, the ocular end elevated and held firmly. *I* is now rotated from the 6 o'clock aspect from left to right, stopping at a point a little beyond the 12 o'clock aspect. By rotating the instrument in the direction indicated, the knife-blade first encircles the verumontanum and only begins to cut when it reaches about the 11:30 o'clock aspect. The successful excision is indicated by a sense of slight resistance imparted to the finger. Following the excision, the inner tube containing the verumontanum is withdrawn and an application of cocain and epinephrin is made through the outer tube, although I have lately discarded the latter procedure. If desired, the entire instrument can be at once removed. However, one should be certain that the cut has been clean and no mucous membrane attached by rotating the instrument. The patient is then put on hexamethylenamin for a few days. Verumontana that are adherent to the urethral walls, or that are highly edematous, may slip out of the window during the process of rotation. This difficulty can be lessened by introducing a finger into the rectum between the two lobes of the prostate and in that way aid in making less mobile the verumontanum and posterior urethra. The pain following the operation is less than follows a strong silver nitrate application and the hemorrhage is never alarming, and ceases in a few minutes. Reactive symptoms, such as pain and hematuria, disappear in from twenty-four to forty-eight hours. We have tried this operation about eighteen times and the only complication we have had, has been one case of acute epididymitis. We have satisfied ourselves of the patency of the ejaculatory ducts by demonstrating spermatozoa in the semen. Colliculectomy does not affect the patient's sexual appetite. Following the removal of the verumontanum, endoscopy of the posterior urethra shows a slight elevation of the mucous membrane in the position of the former verumontanum and one or both ejaculatory ducts are in most cases visible.

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* From the Departments of Genito-Urinary Surgery of the College of Physicians and Surgeons and the Johns Hopkins Hospital.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

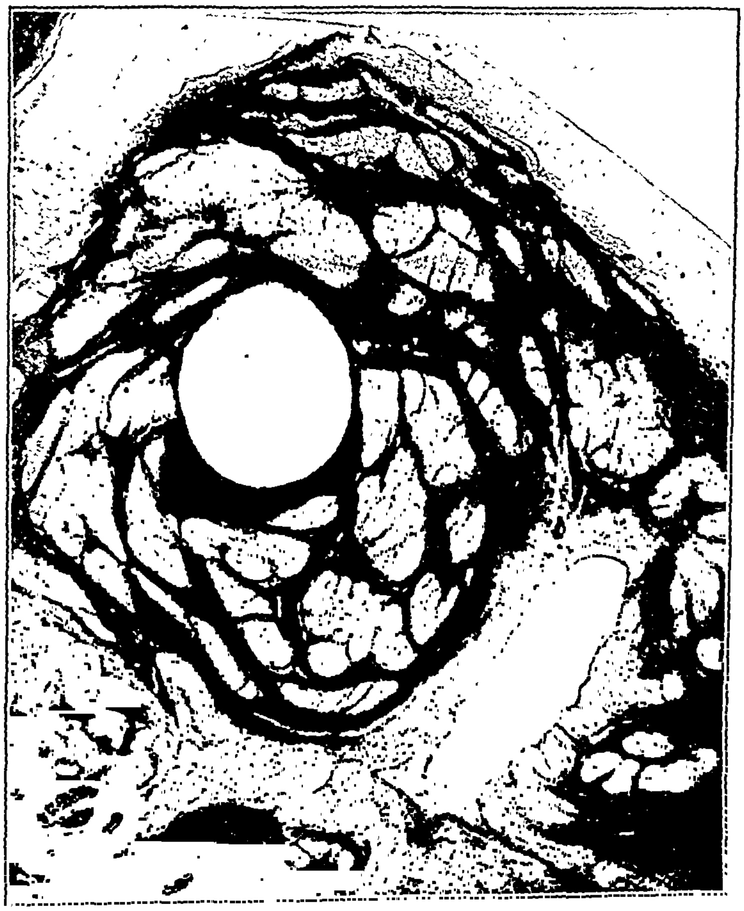

Fig. 3.—Section of verumontanum showing elastic tissue formation. Photograph includes central glandular portion and only small part of stroma portion. Darkened areas represent elastic tissue. Note how it enters into formation of walls of acini and the stalks of the infolding processes.

I am not prepared at this time to speak of the clinical value of the operation, but prefer to discuss the anatomy, histology and pathology of the verumontanum, which the excisions afforded me. Suffice to say that unless the therapeutic results are due to a specific action of the measures employed, or the general action on the whole posterior urethra, the operation must at least emulate, if it does not excel them. I am free to confess, however, my belief that the beneficent results in many cases are due in no small measure to the coincident action on the whole posterior urethra, a view which is not shared by most observers.

ANATOMY

I have examined a large number of text-books on embryology, histology, anatomy, pathology and genito-urinary surgery and it is surprising what a dearth there is on the subject of the verumontanum. Practically all repeat that the verumontanum is a rounded elevation situated on the floor of the posterior urethra, having opening on its lower front walls the ejaculatory ducts and on its upper anterior surface the sinus pocularis. Some erroneously assert that the ejaculatory ducts always open in the sinus pocularis. The latter in man is a rare occurrence. Nowhere have I seen its histology described in detail. This I propose to do. The gross appearance of the verumontanum shows the color a pale pink, lighter in hue than the surrounding mucous membrane of the urethra. It is rounded or oval in shape, excepting the base, which is more flat. The sinus pocularis may be represented by a small rounded opening or as a mere slit. The ejaculatory ducts are difficult to see. Its consistence is fairly firm and judged from the surface, would seem to be more or less homogeneous, but on examining the base, a truer knowledge of its structure is at once evident. Here one notes that the verumontanum is composed of two distinct structures separated by a dense, pearly-white, circular capsule. The inner or central portion comprises about one-fourth to one-third the whole, has a yellowish color, a loose, spongy, lobulated character and projects over the rest of the base of the organ. In its immediate center is a minute aperture. A fine wire or probe is easily admitted, extends through and comes out at the opening of the sinus pocularis above. The outer or peripheral portion comprises about two-thirds or three-fourths of the whole, is grayish pink in color, its texture fine, close and more or less homogeneous.

HISTOLOGY

The microscope readily enables us to differentiate the verumontanum into a central glandular portion and a peripheral stromal portion. The surface is covered by a many-layered, stratified, squamous epithelium, similar to that seen on the surface mucous membrane of the posterior urethra. Below this, one sees a layer of subepithelial connective tissue stroma. Deeper down in the central portion, one encounters groups of glands which show numerous intra-acinous proliferations. These infoldings are composed generally of several layers of epithelial cells, which may be of the simple cuboidal, columnar or squamous type. At times one can see the infoldings of a stratified type in one portion of the acinus while another will exhibit the cells composed of a simple, cuboidal epithelium. At times the infoldings are composed of a solid mass of epithelial cells. More often one can see a fine supporting stalk. Many of the acini seem to be dilated. No corpora amylacea are seen and the lumen of the glands seems to be empty. The outer, or the peripheral portion, is composed largely of normal-looking fibrous tissue stroma containing here and there an occasional glandular acinus, which may show the same infoldings already described. Several observers have removed polypi from the verumontanum, which had the same microscopic appearance as the foregoing and which they termed "glandular polypi." It is possible that they were describing the verumontanum itself. The capsule is composed of dense, circular bands of fibrous and elastic tissue. By special staining methods, we were able to show that the verumontanum both in the glandular and stroma portions, contains much elastic tissue (Fig. 3). This, however, varies in the different specimens. It is arranged in long wavy strands, and is fairly rich in the capsular portion. From here, one can see it extending into and forming part of the intra-acinous stroma, the walls of the acini and the stalks of the infoldings. Fibrous tissue, of course, is the predominating stromal element. The verumontanum is poor in involuntary muscle fibers, not especially rich in nerves, but plentifully supplied with blood-vessels and lymphatics. This microscopic picture somewhat resembles prostatic hypertrophy. The differentiation is made by the fewer acini, the lessened dilation and the lessened infoldings of the acini and the greater amount of intra-acinous stroma seen in the verumontanum.

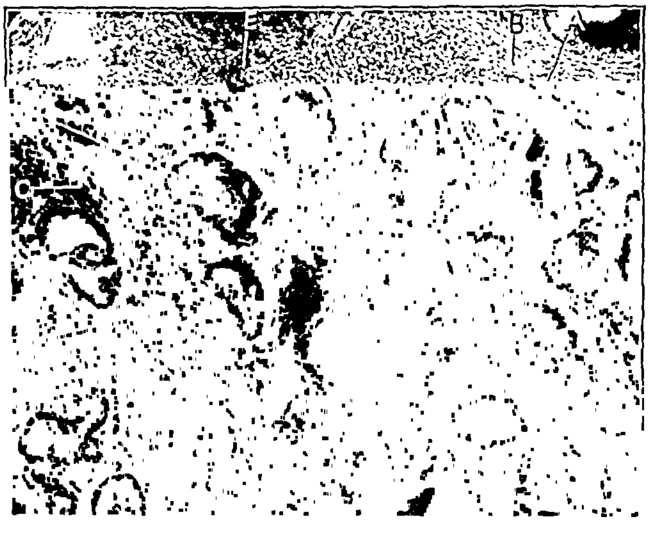

Fig. 4.—Section through an infected verumontanum. Infection is limited to left half; right half is normal: *a*, normal acinus showing infoldings, suggests prostatic hypertrophy; *b*, normal stroma; *c*, periacinous infiltration with round cells; *d*, normal acinus replaced by round-cell infiltration; *e*, infected stroma.

SINUS POCULARIS

Most text-books simply describe the sinus pocularis as a rounded or slit-like opening on the anterior summit of the verumontanum. Burckhardt mentions that it courses through the verumontanum and then blindly ends in the substance of the prostate. It is developed from the lowermost ends of the mullerian ducts and is therefore analogous to the female uterus and vagina, on which account it has been called the uterinus masculinus. Our studies show that the sinus pocularis (Fig. 2) is a long canal lined by a many-layered squamous epithelium, and by serial sections we have been able to demonstrate that it ends by a complicated system of invagination processes. They are also lined by the same type of epithelium and suggest glandular organs, but are probably only secreting surfaces. It is easy to see how favorable this structure is for retention products and suggests difficulty in eradicating infection. Surrounding the sinus pocularis are the central group of glands already described.

PATHOLOGY

The only type of pathologic verumontanum that we have been able to study thus far has been that due to infection. We have had several such cases, but they nearly all show the same picture (Fig. 4), namely, a submucous and a periacinous infiltration of round cells, among which one can see an occasional pus-cell. In some places round-cell infiltration may be so marked that it will completely replace the position of a former acinus. At times one can see in the interior of the acinus round-cells, pus-cells or desquamated epithelial cells. Occasionally red blood-cells may be seen, the result of trauma. We have sections which show infection traveling down the length of the sinus pocularis into the invaginations below, showing the necessity of injecting the canal, as first suggested by Luys and later independently by Geraghty. Indeed, we believe that researches that we are now carrying out will show that the sinus pocularis is often the most important factor in keeping up infection in the verumontanum and that the surface appearance of the latter indicates the pathologic condition in the utricle below, as an ulcerated ureter mouth reflects kidney tuberculosis above. Let me cite a case to illustrate this point:

W. S., complaining many months on account of frequent nocturnal emissions: Endoscopy shows a highly inflamed verumontanum covered by many granulations. Several applications of caustic to the verumontanum brought no relief in symptoms or improvement in the appearance of the organ. Once following mere endoscopy and another time after the application of caustic, patient had severe urethrorrhagia with retention of urine. During endoscopy, March 30, 1914, the edge of the tube was pressed against the verumontanum and a drop of thick pus exuded from the utricle. Injections by means of Geraghty's syringe were now given and following the second or third injection, the patient's symptom of emissions disappeared and verumontanum assumed a normal appearance. He is still being treated for his chronic urethritis.

Finally, it seems to us that discharges in the urethra are perpetuated or rekindled by infection in these glandular structures, and a more wide recognition of this fact will be followed by an increased percentage of chronic gonorrhea cures.

CONCLUSIONS

1. Colliculectomy is a simple operation for removal of the verumontanum. It is less liable to untoward complications and sequelae than strong applications of silver nitrate or the thermocautery.
2. The study of the pathology of the verumontanum is made easy, in consequence of which a therapy will be devised that will be based on science, rather than on empiricism.
3. Surface applications of mild antiseptic solutions *seem to be irrational.* Strong penetrative cauterant substances may have great therapeutic value in curing infections, but may do more harm than good, on account of the production of untoward complications or sequelae.
4. A straight-beaked colliculectotome lends itself to removal of vegetations and polypi from any part of the anterior urethra.

THE ENDOSCOPIC TREATMENT OF NOCTURNAL POLLUTIONS*

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With the introduction of a new procedure for the purpose of examination and treatment, there occurs of necessity a period of time before its recognition becomes general and its utility established. After this neophytic period has been successfully passed and the new procedure has established its worth and the medical profession has accepted its new aid, it becomes incumbent on those interested to separate the component parts and special fields of utility of the newcomer and to study in such smaller groups the various advantages and finer details, so that in the end the composite whole stands out the more clearly by reason of the sharp details of its individual features.

This is true at present of the value and use of the endoscope, now securely established as to its utility in examination and treatment, and it behooves us, the urologists, to group the cases, such as chronic posterior urethritis, sexual neuroses and abnormalities, polyps and neoplasms, diverticula, chancres, chancroids and herpes, etc., so as to allow of separate intensive study and analysis, by means of which we may hope to classify the findings, to establish the pathology, and to perfect the treatment by the correlated results.

With this in view I have endeavored to present here a brief survey of my experience in handling cases of nocturnal pollutions by means of the endoscope.

In speaking of nocturnal pollutions or emissions, the question always arises: What constitutes a digression from the normal? This is purely an academic question on which many varying views are held. Suffice it, at this time, to state that I am considering the condition a pathologic one only (*a*), when the pollutions occur more often than twice a week over a period of two months or more, especially when they occur on succeeding nights or when twice or more during one night, or (*b*), when the pollutions leave the patient mentally depressed or physically fatigued during the morning of the succeeding day. I feel that this is a most generous limit.

It has been my universal experience in handling these cases to find, on endoscopic examination of the posterior urethra, varying degrees of pathologic changes in the walls either of the urethra, or more frequently of the colliculus itself.

At times the walls of the posterior urethra are but slightly excoriated with areas or streaks of a raw redness, often covered with superficial granulations that bleed on touch. This comparatively mild irritative reaction is less frequently seen than a general sodden engorgement of the walls, which appear mossy, dark red, redundant, and fold into the end of the urethroscope. Twice I have seen a general varicose condition, which one might call hemorrhoidal, in which the turgescence of the vessels caused the walls to appear actually blue—a venous stasis.

Even more pronounced changes are found involving the colliculus, which is, likewise, the most frequent point diseased. It is found enlarged to double its size, hyperemic, succulent, and especially tender to the touch. At times it has a raspberry appearance, covered with gross granulations; at other times an exudate covers all or part of it. Actual ulceration, by which I mean a localized circumscribed area of erosion, though rare, is occasionally seen. Polyps, retention cysts of either the utricle, the ejaculatory or prostatic duct orifices, have been recorded. And here let me call attention to a condition rather often seen, whose significance I know not, nor have I seen reference to it elsewhere, and that is that in some cases one sees on the colliculus smaller areas of darker red tissue which appear to a certain extent translucent, and you seem to see deeper into the tissue; these areas are flush with the surface but not covered with the normal mucous membrane; they are not ulcerations and have no exudate. They are especially resistant to cauterization and often show remarkably rapid changes in growth. From what tissue I have been able to study histologically, these areas appear to be formed of glandular hyperplasia, and whether or not they have any connection with the occurrence of subjective symptoms I have not, as yet, been able to prove to my complete satisfaction. The question of course immediately arises, Are these marked changes, found in the posterior urethra on endoscopic examination in cases of frequent nocturnal pollutions, the cause or the effect of the emissions?

Sexual function, like other physiologic functions during the period of adolescence, grows with the excessive use of it, and when we search the histories of these cases it is rare indeed that we are not able to find some antecedent, in the form of either a sexual misdemeanor or some irritative infection, to account for the urethroscopic findings and one that will bear on the etiology of the condition.

Twenty-one per cent. of my cases are in a class in which there has been no antecedent history of any infectious urethral disease. Practically every one of these patients has at some period of his life been an excessive masturbator. The cases of this group illustrate repeatedly the gradual creation of a congestion of the sexual apparatus through repeated insults, until permanent pathologic changes, such as cited above, have developed. Practically every one confessed to having performed the act every day over a period of one or more years, while some have been such chronic habitués that they have repeated it as long as erection was possible.

To be sure, in these non-infectious cases, while the pollutions are the effect of the pathologic changes in the posterior urethra, at the same time, they are both indirectly the effect of an excessive libido, and follow some form of excessive sexual indulgence as an antecedent cause. But it is through the increasing and prolonged stimulation of the genital nerves and especially the nerves to the blood-vessels, combined with the mechanical insults, that a static catarrhal condition develops. The described proliferative pathologic processes develop and spread, and with this there appears the common source for both the pollutions and the continuance of an excessive sexual appetite. The sexual misdemeanor, the result of the unsatisfied libido, is the cause of the pathologic changes in their beginning, but when once established, these changes in turn artificially stimulate the libido and either become overpowering to even the strongest will-power, or, if the habit is actually stopped, manifest themselves in the form of frequent seminal emissions on the slightest provocation. Allow me to cite such a case:

R. F. started masturbation early in life and practiced it regularly twice a day, night and morning, for three years. He then desisted and emissions began and soon increased in frequency, until they now occur always twice a week and often to such a degree that, as during the last week, he had five in three consecutive nights. The mildest social pleasures are associated with ejaculation. Even a rub-down after a boxing bout in the gymnasium brings on an erection and a subsequent ejaculation. He never had a urethritis and sexual intercourse is impossible on account of premature ejaculation. On endoscopy the colliculus was found to be so swollen that only part of it could be seen at a time. It was dark red and its surface roughened and appeared to be covered with fine granulations. The urethral walls were markedly engorged. He received three applications of silver nitrate at weekly intervals, and the pollutions diminished in frequency to once in two weeks, and after two months' rest and observation with the continuance of such improvement the patient was discharged from treatment.

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Another case with somewhat different history is that of J. C., aged 17, who masturbated in excess for several years, often repeating the orgasm three or more times in immediate succession. He stopped the practice eighteen months ago. At first pollutions would occur once in a month and have gradually increased in frequency until now they occur five times a week, often on succeeding nights, and leave the patient in the morning fatigued and with a dull pain across the small of the back. He thinks that once he noticed blood in the seminal ejaculation. He has never attempted intercourse. On endoscopy there was found on the tip of the engorged colliculus one of the areas of glandular hyperplasia, to which I referred above, appearing as a soft angiomatous spot, of a dark purple color, and a little to the left of the mid-line. It was severely cauterized. After three applications of the cautery by means of the endoscope at weekly intervals the patient reported that he had had no emissions in the passed two weeks and was feeling perfectly well. His posterior urethra was normal and he was discharged.

I have attempted to show how such misdemeanors cause an atonic congestion of the delicate tissues of the erectile colliculus and of the entire prostatic region of the urethra. When once such a condition is established, this pathologic area forms but one segment of a vicious sexual cycle. Should the habit be broken off, as most of these patients attempt to break it, when with years discretion develops, the cycle continues, that is, an irritated and congested posterior urethra, giving stimuli to the sexual centers, causing erection, then more stimuli and ejaculation. The one place to attack and break such a cycle is to cure the region of primary injury in the posterior urethra.

A second and larger group of patients (42.8 per cent.) have given a history of an antecedent gonorrheal urethritis. Although possibly it is not quite fair to group all these infectious cases together, simply because of the past history, yet the changes that one sees in the posterior urethra under such conditions can be told only with difficulty from those of the previous group, and it is often the accuracy of the history as given that makes this type of case to be classified as a postgonorrheal complication. Exudate in the posterior urethra in my experience speaks for infection and is the only sure sign that is telltale of a previous specific urethritis. Often the history is as definite as that of W. H. D., who acquired his initial specific urethritis in February, 1913. It became posterior and was complicated by a right-sided epididymitis. In May the last traces of the discharge disappeared. In August the increasing frequency of nocturnal pollutions attracted his attention for, as before he would have only one in every three or four weeks, since the subsidence of his urethritis, they have gradually increased until now he has three or four a week, often twice a night. Insomnia, lassitude, pains in the hips and back are troublesome subjective symptoms. The urethroscope demonstrated an exquisitely tender colliculus, two or three times normal in size, thickened, engorged, dull and tense, non-ulcerated. Five endoscopic applications of silver nitrate, with lavage of the utricle, at weekly intervals gave prompt results and the patient was given one month's rest. At the end of that period he was sleeping better and had had but one pollution during the month; the pains were all gone. A second report four months later showed that he was perfectly well and normal in all respects.

Three of my patients presented polyps of the posterior urethra. One denied having had gonorrhea, in the second case it was not stated, while the third was complicated by a chronic posterior urethritis. The pollutions have been cured in all by the removal of the polyp and in the third by the subsequent cure of the urethritis.

Local treatment of these pathologic changes has been carried on through an open-air endoscope. Various solutions have been tried out, including zinc and copper sulphate, tannin, argyrol, protargol, iodin, trichloracetic acid, and various combinations that have been found efficacious in the treatment of lesion of the mucous membrane elsewhere about the body. When all is said and you really want work done, however, there is but one universally useful preparation, and invariably, one falls back on different strengths of silver nitrate. I find the 10, 20 and 50 per cent. solutions the best for superficial changes and use the crystal only when I want actually to destroy tissue. One should always remember, when using solutions in the posterior urethra, that after applying the medicament and giving it the necessary time to act, the field of operation should be completely dried with a cotton swab, and if this precaution be observed the patient is spared a great deal of discomfort. Electricity in its various forms has not in my hands given any satisfactory results.

In offering this brief survey it has not been my purpose to convey the idea that every case of frequent nocturnal pollutions is promptly and permanently cured by endoscopic treatment. My hearers are too familiar with the problems of our work to believe such a thing were it even intended. That remarkably beneficial results are obtainable in decidedly more than the majority of cases, however, has been my experience. I know of no distinguishing feature of any individual patient, or history, whereby one can prophesy that this patient he can cure and that one not, although it seems that often the most brilliant results are obtained in the most aggravated cases. Another feature is worthy of remark and that is that frequently the greatest benefit is demonstrated a month or more after all treatment is stopped. This latter feature has rendered it impossible for me to tabulate my results accurately, where a large number of the patients have been derived from dispensary practice with the usual inability to trace the subsequent history of such patients satisfactorily at an interval of six months or a year or more, after discharge. Those who have been under private observation, however, and those who have responded to inquiry, or have returned for observation, make me sanguine that the results in a large majority have been most happy.

Professional Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. RYTINA AND RANDALL

Dr. H. L. Leiter, Syracuse, N. Y.: In cases with doubtful history if bacteriologic and serologic examinations are made, we will occasionally obtain favorable results. With regard to cauterization of the posterior urethra, I think we should use some discrimination as to what cautery we use. If the whole lining of the prostatic urethra is affected, the solutions of silver nitrate may be effective, but when there are small isolated spots, in my experience, fulguration has worked very well. The photomicrograph of the sinus pocularis illustrates that very well. One could not expect a silver-nitrate solution to get down into that sinus very far, nor the silver stick, but one could put the fulguration wire down there and perhaps the treatment would be more efficacious. I have heard of accidents with fulguration in the prostatic urethra, but in my experience I have had none. Have any of the other members had any accidents with it? Has Dr. Rytina found any process other than inflammatory?

Dr. J. D. Barney, Boston: Dr. Rytina has made a valuable contribution to our knowledge of the organs at the neck of the bladder. The pictures which he showed were strikingly like those of the seminal vesicle, the ampulla of the vas, and the prostate. When we realize how very complex and how minute are the acini in which a gonorrheal infection can lodge, we will find easier the explanation of the difficulties that we have in curing our cases of chronic gonorrhea. When we realize that these regions resemble a sponge, and how difficult it is to get the sand out of a new sponge, we will understand that long-continued treatment by silver nitrate or massage or fulguration is the only way in which such patients can be cured. The verumontanum is closely similar in structure to the vesicles and the ampulla of the vas, as I have been able to show by pathologic studies of these organs.

Dr. F. W. Robbins, Detroit: Removal of the verumontanum appeals to us as being radical; we do not hear very much about the dangers that may result from it. Dr. Rytina spoke of the blood-supply of the verumontanum. I have had one or two experiences that assured me that the blood-supply is a factor that should be taken into consideration, and we must also remember that these urethras are septic and manipulation may lead to epididymitis. I had one case in which epididymitis followed removal of the verumontanum. A patient had been suffering much with various nervous phenomena that I attributed to the possible trouble with the verumontanum. The man had had a suprapubic cystotomy (the surgeon thereby hoping to get at the condition through the bladder) as well as milder forms of treatment at many hands. This man had a verumontanum that through the urethroscope appeared to be large, pale and leathery, much like the appearance of the vagina of a prostitute, that has continually been burned with mercuric chlorid solution. This man had as a result of the various diseases an atrophied testis on one side. When I saw the veru, thinking that I could do nothing further with it, I cut it off with a small pair of scissors. Following its removal he went home in good condition, but the next day I found a large amount of blood in his bladder. After breaking up the clots with a large sound, they were readily evacuated. The interesting point, to my mind, was not that he had, following the traumatism, a slight epididymitis on the healthy side, but his neurotic condition, when he felt that the doctor had done the worst thing possible for him in making him absolutely sterile by producing an epididymitis on his only healthy side, the other testis being valueless. The amount of hemorrhage after this operation was a matter of considerable moment, and if we can accomplish the same purpose with the high-frequency current as we can with a cutting instrument, it will be an advantage.

Dr. Herman L. Kretschmer, Chicago: It is not quite clear to me just when we should excise or remove these vera, and when we should be satisfied with local applications. Will Dr. Rytina tell of the condition of the prostate in the patient with infected verumontanum?

Dr. Louis E. Schmidt, Chicago: These chronically infected utricles persist for a long time. Occasionally during the course of such a chronic urethral infection of the adnexa one sees a so-called prostatic abscess arise. I believe that a great many so-called prostatic abscesses are nothing more nor less than pseudo-abscesses of the utricles. These abscesses may reach an enormous size, the fluctuation can easily be felt by rectum, and if, in these cases, we watch the increase of the fluctuating area, we will note that the fluctuation is always in the median line. I am quite certain that these pseudo-abscesses of the utricles are frequently mistaken for prostatic abscesses. Therefore I think it is well always to examine any chronic posterior urethral infection and to treat these conditions, because the possibility of abscess formation is constantly present.

Dr. E. L. Keyes, Jr., New York: Dr. Rytina has shown us pathologic specimens exhibiting changes in the utricle. He would be the first to say that he could show us similar changes in other urethral glands. The beauty of the dilatation treatment of chronic urethritis, as contrasted with too much dependence on treatment through the urethroscope, is that the effect of pressure extended over a considerable portion or over the whole urethra is likely to do more good in most instances of chronic urethritis than the especial attention to one set of glands which happen to be more visibly diseased than others. With regard to the remarks of Dr. Schmidt on prostatic abscess, the pathologic investigations of the late Dr. Samuel Alexander, which I have been able to verify, are calculated to show that, probably in the great majority of instances, prostatic abscess begins as a miliary suppuration throughout one or other of the lateral lobes of the prostate itself.

Dr. John A. Hawkins, Pittsburgh: Dr. Rytina spoke of the possibility of epididymitis following applications to the verumontanum. In my experience epididymitis rarely follows treatment in the neighborhood of the verumontanum. I have never seen this complication. Will not treatment of this body accomplish as much as removal? The verumontanum is a structure that was put there for a great deal more perhaps than the appendix was put in the abdomen. What direction does the semen take and what prevents the ejaculatory ducts from becoming stenosed after the operation? In 1901 I accidentally removed the top of an enlarged verumontanum. How much of it, I do not know. It did no harm. I have, however, recently doubted the harmlessness of the procedure of removing the entire verumontanum.

Dr. Frederick R. Charlton, Indianapolis: Does Dr. Rytina think he accomplishes anything more than a curetting of the verumontanum, or does he believe that he gets the entire structure? It seems to me, as to Dr. Barney, that we are on the verge of sweeping into a specialist's fad. I cannot for the life of me believe that such enormous importance attaches to the verumontanum alone as it seems to have been given during the last year or two. I have felt that we have been neglecting, perhaps only transiently, the prostate—an admittedly important organ or gland capable of infinite damage. Once thoroughly infected, I question whether it is ever completely restored. I do not know whether anyone is really working hard on chronic infectious prostatitis, and I am much afraid that in the attention we are giving to this almost insignificant structure, we are going to grasp at a shadow and miss the substance of things in this region.

Dr. Robert H. Herbst, Chicago: I cannot reconcile myself to the belief that the verumontanum is responsible for all that is charged to it. I do agree that we frequently see pathologic changes occurring in this organ, but I am thoroughly convinced that, in most instances, these are provoked by discharges from the seminal vesicles. We know that the gonococcus is the common offender in the male urethra and also how frequently this infection spreads into the seminal vesicles. It is the constant discharge of pus from the genital tract which I think is responsible for much of the so-called verumontanum disease. Furthermore, if in these cases we give the attention to the seminal vesicles which they deserve, we will see much of the trouble in the verumontanum disappear without further treatment. I believe that the disturbing element in these cases is primarily located in the seminal vesicles.

Dr. Alexander Randall, Philadelphia: I call attention to the truly unprecedented and noteworthy work of Dr. Rytina. Thorough search of the literature, last year, enabled me to find but two cursory descriptions of this important structure, the one by Burckhardt, and the other by Delbet, in Poirier and Charpy, Traité d'Anatomie. Dr. Rytina has given a most thorough description of the histology and pathology of the colliculus. The glandular hyperplasia referred to I have seen demonstrated a number of times. Often there is a most extensive hypertrophy with marked infolding of the walls of the acini; at other times the acini are distended with secretion; a third type is that of sclerosis and extensive growth of connective tissue. I feel that one must be careful and should try all other forms of treatment before having recourse to such a radical removal as Dr. Rytina has described, but that this operation has its appointed place. That truly remarkable results can be obtained thereby in carefully selected cases, has been proved to my own satisfaction in the few cases in which I have considered removal to be indicated.

Dr. A. G. Rytina, Baltimore: The microscopic picture of the sinus pocularis somewhat resembles the structure of the normal seminal vesicles, as Dr. Barney pointed out. In the beginning I was in doubt whether to regard these invagination processes as true glands, but, as the lining consists of many layers of squamous epithelium, I came to the conclusion they were not glands, but they do have a secreting surface. Answering Dr. Kretschmer, the patient who had the infected verumontanum had also a chronic prostatitis. When is the operation indicated? I have only recently begun this work and am not prepared to answer this question with authority. We are carrying out extensive researches on operated and necropsy specimens in the human being and perhaps, later, I shall be able to answer that question. Dr. Keyes brought out an important point, namely, the dilatation treatment of the posterior urethra. In the future, perhaps, a therapeutic measure will be to massage the verumontanum through an endoscopic tube. I reported one case of seminal emissions in a patient who had a highly inflamed verumontanum. I made repeated applications without relief. Accidentally I pressed the endoscopic tube against the verumontanum and quite a gush of pus came out. I then injected the utricle several times with the result that the emissions and inflammation disappeared. He had a deep infection which, traveling up, infected the surface of the verumontanum. Probably we will learn later that a highly inflamed verumontanum indicates infection of the deeper structures, just as inflammation about the ureteric mouth causes suspicion of tuberculosis of the kidney. Dr. Hawkins said epididymitis was rare following applications to the verumontanum. I am sure that anybody who has made many applications to the verumontanum has seen more than one case of epididymitis resulting. Do I get the whole verumontanum? It is taken out as thoroughly as can possibly be hoped. The instrument acts as a curved knife and the verumontanum comes out almost intact. Just a very little piece at the base persists after the operation. With Dr. Herbst, I do not believe that the verumontanum causes all the symptoms accredited to it. I am carrying out this work to prove what effect the verumontanum has in so many of these sexual, urinary and referred disturbances. I believe we ascribe too much importance to it as a cause of so many diverse symptoms, and I hope to prove whether or not it is the true causative factor.

ANARTHRIA DUE TO SYPHILIS

REPORT OF TWO CASES

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Of all the forms of neurologic syphilis, the one giving rise to the most sudden, the most profound and startling display of symptoms is gummatous meningitis. Existing throughout the central neural axis, the gravest manifestations naturally arise from interruption of nerve paths in the cerebrum.

Coincident with the marked exudate of albumin and cells evident in the cerebrospinal fluid of such cases, there must be a similar perivascular exudate in the substance of the brain itself, producing, in certain cases, an ischemia of certain foci. Any cranial nerve may be suddenly put out of commission, and as a result the patient may exhibit some form of heterophoria, ptosis, single or double choked disk, unilateral or bilateral deafness, facial sensory or motor disturbances or respiratory difficulty.

Still more bewildering are the symptoms following the blocking of the circulation in the subcortical vessels supplying the coordinating paths. An intensely interesting phenomenon results when the coordinating paths in the lenticular zone are interrupted. This zone includes the lenticular and caudate nuclei, the internal and external capsules, the island of Reil, the motor cortex and the fibers between them.

When this area is the site of disease, the resultant symptom is designated by Marie anarthria, and is the simple motor aphasia of the older writers. There is no paralysis of the vocal organs, but the patient simply does not remember how to speak. A lesion so isolated as to produce this condition alone could hardly be expected in so general an infection as syphilis, but in the following cases this was the most remarkable symptom.

CASE REPORTS

Case 1.—*History.*—A Russian Jewess, aged 35, was brought to the Neurological Institute, March 23, 1914, because her friends thought she was "losing her mind." She apparently did not understand what was said to her, and they could not understand her when she attempted to speak. In fact, during the past week she had become wild and seemed not to know what she was doing. She attempted on one occasion to jump from the window.

She had been in this country four months and during that time she had spoken with great difficulty and complained of severe pains in her head and weakness of her right leg and arm. During the last day on board ship, four months previously, she asked for a glass of water. When it was brought it was observed that she was unable to hold the glass in her right hand and, furthermore, that any attempt at speech failed utterly. Previous to this she had made no complaint of feeling ill. This condition lasted over night and she was again able to speak the following morning. The patient was taken to her sister's house and the right-sided weakness improved slightly.

Suddenly four weeks later she again became completely unable to speak for three consecutive days, although there was no paralysis of lips or tongue. From that time until the date of admission to the hospital her speech was badly disturbed so that it was with difficulty that she made herself understood. This state gradually deteriorated so that at the time she was first seen at the hospital she was only able to utter curious guttural sounds which her sister and other native Russians said bore no resemblance to any Yiddish words.

Physical Examination.—Physical examination revealed a slender woman of 92 pounds with a dull, expressionless face. She repeatedly put her hand to her head, apparently to indicate pain. Aside from absent ankle-jerks and a slight irregularity of the right pupil there were no physical defects discovered. The pupils responded fairly well to light, possibly better to accommodation. The fundi were normal. Hearing seemed unimpaired. The face and tongue were symmetrical. There was no inequality in the tendon reflexes at the knees or in the arms, the abdominals were also equal. Gait and station were unimpaired, and there was no demonstrable difference in the strength of the extremities of the two sides. The patient's temperature was 98.4 F., pulse 80, respiration 18.

Diagnosis and Treatment.—A diagnosis of cerebral syphilis was made, which was confirmed the following day on examination of the cerebrospinal fluid.

She was then subjected to a series of intravenous injections of salvarsan with gratifying results. The record of the therapy and the effect on the serology are given in Table 1.

TABLE 1.—RESULTS OF BLOOD AND CEREBROSPINAL FLUID EXAMINATION IN CASE 1

Date	Serum Wassermann	Cerebrospinal Fluid Wassermann	Cells per c.mm.	Glob.	Salvarsan, Gm.
3/29/14	++	++	930*	+++	0.5
3/27/14	....	....	196†	+++	0.5
3/31/14	....	++	230‡	++	0.4
4/ 7/14	++	++	68	+	0.5
4/14/14	....	+	19	+	0.4
4/18/14	....	....	...	......	0.4
4/21/14	+	+	40	+	
4/25/14	....	....	...	......	0.6
4/28/14	+—	+	24	+	
5/ 2/14	....	....	...	......	0.3
5/ 5/14	+—	+	26	—	
5/11/14	....	....	...	......	0.3
5/25/14	....	....	...	......	0.3
6/ 1/14	....	....	...	......	0.3
6/ 9/14	—	+	15	—	0.3

* 360 polynuclear, 570 lymphocytes.

† 23 polynuclears, 173 lymphocytes.

‡ This and following counts were lymphocytes.

Outcome.—During the first two weeks in the hospital she kept up an incessant jargon during the day, unintelligible even to Russians, and was noisy and restless at night. She insisted on walking about and had to be restrained. During the third week the patient began to quiet down and to sleep all night. The following two weeks witnessed a complete transformation. Previously irritable and unruly, she now became calm, grateful, and ceased the harsh scolding sounds. Although she could understand no English, she understood fully her native speech and could talk fluently and rationally in Yiddish. In the course of the next month she became animated, interested in her surroundings, thoughtful in regard to others and made herself useful in every possible way. Aside from the complete restoration of speech, the change in personality was little short of marvelous.

On contemplation of what an enormous exudate 1,000 cells per cubic millimeter of cerebrospinal fluid represents, it is not surprising that grave symptoms indicative of cortical involvement are present. The altered disposition observed in the above case was probably due to exudative irritation of the cortex of the frontal lobes. The transient hemiparesis, on the other hand, was no doubt the result of a subcortical lesion in the lenticular zone, ischemic in character, due to occlusion of a small artery, caused by the pressure of the surrounding exudate.

In the following case, besides the subcortical lesion in the lenticular zone producing motor speech disturbance, we again observe cortical irritation phenomena, this time referable to the Rolandic area, as evidenced by the twitchings of the left side.

The lesion responsible for the anarthria was, doubtless, situated more superficially in the lenticular zone of Marie, as described above.

Case 2.—*History.*—A young man, 26 years of age, applied at the Neurological Institute, Oct. 6, 1913, for relief from a headache which he had had for three months. During the previous four days it had practically ceased, but had been succeeded by involuntary twitching of the left side of the mouth, left shoulder and at times the entire left side of the body. He complained further of sleeplessness and was greatly frightened two days previously by complete loss of the power of speech. He understood what was said and knew what he desired to say but was unable to utter a word. Four months ago he had had a chancre but no secondary manifestations.

Physical Examination.—Searching physical examination revealed absolutely no evidence of organic disturbance save a lower neuron paralysis of the left seventh cranial nerve. He was well developed, skin and mucous membranes were negative, and no glandular enlargement was discovered. The ocular muscles were efficient, the pupils normally active and the fundi negative. There was no pathologic reflex and the tendon and skin reflexes were active and equal. Sensation was not affected.

On the day of his arrival at the hospital the patient spoke with great effort, the difficulty being the expression of the desired words; in fact, many of his replies made no sense at all and were a mere succession of syllables or words. On the other hand, he seemed to comprehend what was said to him.

Diagnosis and Treatment.—A diagnosis of syphilitic exudative meningitis was made. Lumbar puncture corroborated this and a full dose of neosalvarsan was administered intravenously on the day of his admission. It was the intention to make a complete aphasic status on the following day, but during the succeeding twelve hours a phenomenal response to the arsenical treatment occurred. The next morning he could speak without difficulty and carried on conversation in an entirely rational manner. There was also striking improvement in the facial paralysis. There was discoverable at this time, however, impairment of both orientation and memory. He was placed on a mixed treatment of neosalvarsan and mercury as shown in Table 2 and complete recovery resulted.

TABLE 2.—RESULTS OF BLOOD AND CEREBROSPINAL FLUID EXAMINATIONS IN CASE 2 UNDER NEOSALVARSAN AND MERCURY

Date	Serum Wassermann	Cerebrospinal Fluid Wassermann	Cells per c.mm.	Glob.	Neosalvarsan, Gm.
10/ 7/13†	+	+	539*	+	0.9
10/15/13	....	....	...	......	0.9
10/20/13	+	+	171	+	0.9
10/24/13	....	....	...	......	0.9
10/31/13	—	+	70	—	0.9
11/ /13‡					
12/ 8/13	+	+	34	+—	0.9
12/12/13	....	....	...	......	0.9
12/22/13	—	—	16	+	0.9
1/1 & 2/14§					
2/1 & 2/14§					
3/17/14	—	—	12	+—	

* 6 polynuclears and 533 lymphocytes.

† During October, 1913, the patient received fifteen inunctions of mercury and fifteen injections of mercuric chlorid.

‡ 5 injections of salicylate, ℳ xv.

§ Weekly salicylate, ℳ xv.

It is in cases of neurologic syphilis such as these that arsenical therapy has brought about the most striking results. The symptoms in these cases were so grave and the transformation wrought was so complete that an account of them was judged worthy of record.

149 East Sixty-Seventh Street.

Evidence and the Scientific Mind.—The unscientific mind possesses but two compartments, one for truth and one for error. . . . The scientist, however, recognizes no such compartments, for absolute truth and absolute error are unknown to him. After weighing the evidence furnished, his decisions consist only in selecting the degree of his confidence that is merited by that evidence.—G. W. Stewart, *Science*.

SPRUE TREATED BY EMETIN HYDROCHLORID *

FERDINAND SCHMITTER, M.D.
Captain Medical Corps, U. S. Army
WASHINGTON, D. C.

In a report[1] to the Surgeon General of the Army dated Sept. 30, 1913, I noted six cases in which the patients were suffering from sprue, all of whom markedly improved under treatment by emetin hydrochlorid (alkaloid) given hypodermically in ½ to 1 grain doses daily for five days. Since then I have observed two more cases and four have been reported to me by other medical officers, in which like results were obtained, making a total of twelve cases in which the patient's symptoms cleared up under the same treatment. One of these patients had concurrent entamebic dysentery. No case of sprue which has failed to respond to this treatment has come to my attention.

Permanent results were not observed because most of these patients returned to the United States shortly after receiving the treatment. In only one case have I been able to follow the course long enough to note permanent results.

The patient, a man, aged 40, had an unimportant previous history which was negative for lues. Wassermann and luetin reactions were negative. He was first taken ill in September, 1906, at which time he weighed 216 pounds. During the following seven years his bowels never acted normally, digestive disturbances were never absent, and vomiting was frequent and persistent. He was almost continually under treatment both in and out of hospital, usually improving slightly under hospital regimen only to relapse soon after leaving. He took various treatments, including yellow santonin, and diets of buttermilk, raw beef, strawberries, apples and bananas. In 1908, when his mouth became inflamed and tongue raw, his disease was for the first time positively diagnosed as sprue. At this time his sexual power began to wane and was completely lost two years later, and during the three years following he never had an erection or sexual intercourse. In 1912 he went to Spain where he took the strawberry-diet treatment. Then he went to the United States where he was further treated but without improvement, and on the advice of his family physician he returned to the Philippine Islands for the purpose of closing his business affairs, arriving here in May, 1913. At that time his weight was 106 pounds. He then took a course of treatment consisting of old yellow santonin (chromosantonin) in olive oil supplemented by buttermilk diet. There followed a period of slight improvement during which he gained 16 pounds, which was succeeded by a relapse in which he lost 5 pounds.

Sept. 18, 1913, the patient came under my care and the emetin treatment was begun. At this time he weighed 117 pounds, his face showed the bronzed patches on a pale skin so common in sprue. His body was emaciated and his feet were swollen, with slight pitting on pressure. His epigastrium was protuberant and he had a tight feeling of distress extending from the middle to the costal margins. His tongue was glazed, raw and beefy, with ulcers on the dorsum, edges and at the frenum. Emetin hydrochlorid in 1-grain doses was administered hypodermically once daily for five days. The day following the first injection improvement in the ulcers was noted and they continued to improve steadily until completely healed. While receiving the treatment he complained of the activity of his bowels, but one week after the first injection he said that he felt better than he had in a long time. Four months after treatment he weighed 156 pounds. His tongue was still raw but he said that it gave him no subjective symptoms. His appetite and enjoyment of food were excellent. About this time his sexual power which had been lost for three years began to return. By the fifth month he had intercourse and by the sixth month he was normal sexually and has remained so. At the present time, the eleventh month after treatment, he is strong, presents a stout, muscular appearance, his complexion is clear, tongue clean, and there is no evidence of sprue remaining. Weight is 177 pounds. The consistent gain in weight and strength is the more remarkable because the patient under business pressure during the past ten months has been doing without luncheons and working steadily until late at night.

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* From the Board for the Study of Tropical Diseases, Manila, P. I.

[1] Schmitter, Ferdinand: Mil. Surg., April, 1914.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

CANTHARIDIN. — Cantharidinum. — $C_{10}H_{12}O_4$, the anhydride (lactone) of cantharidic acid.

Actions and Uses.—Preparations of cantharidin are used in place of corresponding preparations of cantharides and have the advantage of being cleanly and more uniform in strength. Cantharidin is recognized by the British, French and Swiss Pharmacopeias.

Dosage.—From 0.00025 to 0.0005 Gm. (1/240 to 1/120 grain).

Cantharidin may be obtained from various species of *Cantharis* or of *Mylabris*. It may be prepared by digesting powdered cantharides with a mixture of concentrated sulphuric acid and acetic ether at ordinary temperature, then mixing with barium carbonate and exhausting the mixture with acetic ether. The solvent may be removed by distillation and the residue allowed then to stand for some time to allow the cantharidin to crystallize. The resulting crystals may be washed with petroleum benzin to remove the fat and then recrystallized from hot alcohol.

Cantharidin occurs as colorless glistening, inodorous crystals; 0.1 Gm. on incineration should leave no weighable residue. Cantharidin is very slightly soluble in water, petroleum benzin or alcohol (90 per cent.); more soluble in chloroform (1:65), in acetic ether (1:150), and in acetone (1:40), and is soluble also in fixed oils. A 0.1 per cent. solution in a fixed oil raises blisters when kept in contact with the skin. The melting point is from 210 to 212 C. Cantharidin slowly volatilizes at 100 C., more rapidly at higher temperatures. It is soluble in solution of sodium hydroxide, the solution depositing crystals of Cantharidin when acidified. Gently warmed with sulphuric acid it yields a colorless solution, from which it is separated unchanged when freely diluted with water.

BENZENE, MEDICINAL. — Benzenum Medicinale. — Medicinal Benzol.—Crystallizable Benzol.—C_6H_6.—A liquid consisting almost entirely of benzene (cyclohexatriene).

Actions and Uses.—When swallowed, this drug usually produces a sensation of burning in the stomach. Benzene is a narcotic which, when swallowed or inhaled, produces vertigo, delirium and tonic convulsions followed by deep sleep; 30 c.c. (1 ounce) of nearly pure benzene has proved fatal. In some cases of chronic poisoning petechial spots, due to small hemorrhages, have been observed. These spots have been attributed to fatty degeneration of the blood-vessels. It produces leukocytosis followed by leukopenia with an occasional increased number of erythrocytes. Larger doses may produce an aplastic anemia. It has been stated that the aplastic anemia is due to a contamination of the drug with nitrobenzene or aniline. Benzene has been used occasionally on account of its narcotic properties and has also been used as an intestinal antiseptic. It is, however, rarely used for these purposes at the present time. It has been somewhat extensively used in the treatment of leukemia. Moderate doses cause a rapid destruction of the leukocytes, especially the lymphocytes. This action is accompanied by an improvement in the subjective symptoms and, in some cases, by a marked reduction in the size of the spleen. In many cases the lymphocytes have been reduced to the normal figure. In others the number of leukocytes has still remained high, although the size of the spleen was reduced. In many cases the improvement is such that an apparent cure is produced. However, a large number, if not all, of these patients relapse or succumb to the toxic action of the benzene. It is recommended to stop the administration of this drug before the leukocytes are reduced to the normal level. Benzene has also been used in a few cases of Hodgkin's disease and in cases of polycythemia. The effect of benzene on the leukocytes is largely enhanced by the previous or simultaneous treatment with the Roentgen ray. The value of benzene in leukemia is not established and caution against too large and too long continued dosage should govern its employment.

Dosage.—0.5 to 1 Cc. (8 to 15 minims) given four times a day. Medicinal benzene may be given in capsules or in an emulsion or may be administered by rectum. Frequent examinations of the blood should be made during the administration of medicinal benzene to determine when it is advisable to suspend the administration of the medicine.

Non-Proprietary Preparation.

Benzene, Merck, H. P., Crystallizable.—Merck & Co., New York.

Medicinal benzene is prepared by fractional distillation of the light oil of coal tar and is a colorless, mobile liquid, posessing a strong characteristic but not disagreeable odor and a burning taste. It has a specific gravity of from 0.881 to 0.885 at 15 C.

Medicinal benzene is insoluble in water but soluble in 90 per cent. alcohol and in carbon disulphide; it is miscible with absolute alcohol and ether. Medicinal benzene is a solvent for bromine, iodine, sulphur, phosphorus, fatty and volatile oils, rubber, gutta-percha, wax, various resins, a large number of alkaloids and some aromatic acids.

Medicinal benzene boils at from 79 to 82 C. It is inflammable and burns with a luminous and sooty flame. When cooled to 0 C., medicinal benzene solidifies. If cooled slowly it crystallizes in rhombohedral prisms, which melt at about 6 C.

It is neutral toward litmus.

Medicinal benzene is not affected by cold sulphuric acid but is soluble in fuming nitric acid, without liberating nitrous vapors. When poured into water the mixture separates and deposits oily globules of nitrobenzene, which can be identified by its characteristic bitter almond odor.

If 2 Cc. of medicinal benzene be shaken with 0.5 Cc. concentrated sulphuric acid and 1 drop of fuming nitric acid, no green or blue tint should be produced.

LEUKOCYTE EXTRACT.—An extract of the leukocytes obtained from exudates produced in the pleural cavities of rabbits or other animals by the injection of an irritant.

Actions and Uses.—Leukocyte extract is believed to increase the immunizing power of the organism into which it is injected.

It is said to be useful as an aid to the action of specific serums or antitoxins and vaccines.

It is claimed to be useful by itself in cases in which the correct bacteriologic diagnosis of the infection cannot be obtained. Its use is still in the experimental stage.

Dosage.—The extract is injected subcutaneously under strict aseptic precautions. The dose may be repeated daily or less often as indicated by the response after injection.

Leukocyte extract is prepared by inciting a purulent exudate in the pleural cavities of rabbits or other animals through the injection of sterile vegetable protein solution.

After the exudate is collected in sufficient quantities, it is aspirated under strict aseptic precautions from the pleural cavities. It is centrifuged and extracts are made of the leukocyte sediment after determining that the exudate is free from bacteria.

LEUCOCYTE EXTRACT-Squibb.—A leukocyte extract prepared according to the method of Hiss.

Dosage.—Not less than 10 Cc. Leucocyte Extract-Squibb is furnished in syringes containing 10 Cc.

Manufactured by E. R. Squibb and Sons, New York City.

It is claimed that biologic and clinical tests have proved leukocyte extract, Squibb, to be of high potency and efficiency.

NON-PROPRIETARY BRANDS OF ACCEPTED ARTICLES

Silver Citrate, Merck.—On heating it yields not less than 62 per cent. of metallic silver. Merck and Co. New York.

Silver Lactate, Merck.—On heating it yields from 50 to 51.5 per cent. of metallic silver. Merck and Co., New York.

Digitoxin, Merck.—Merck and Co., New York.

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from Vol. LXIII, page 2291)

XIV

THE COMMON INFECTIOUS DISEASES

Before taking up these diseases separately, it may be well to quote Vaughan's Harvey Lecture[1] as to what is scientifically understood by a germ pathogenic to man, and just what infection means. Briefly, Vaughan says that it is the protein poison produced by the germ that causes symptoms. If the germ does not find in our bodies an albumin suitable for its food, it dies and is not pathogenic to us. Also, if our tissues, in individual cases, can produce antibodies or opposing serums or antitoxins rapidly enough to overcome a germ which does find suitable food albumins in us, it will die before it intoxicates us, and we become, at this time at least, immune. Vaughan also says that acute disease or intoxication results when there is rapid multiplication of the infecting germs that find suitable pabulum, its protein toxins causing rapid sensitization of our systems, and a resulting fever which is of benefit. If the production of these pathogenic germs is slow, the result is a chronic infection, and when the proper albumin for the food of these germs is formed only in restricted areas, the result is a local infection.

COLDS

Next to disturbances of nutrition in infants and young children, colds, inflammations of the air passages, are the greatest menace to health. Colds far surpass in frequency any other disease condition. Generally, the older the child, the less frequent the colds, but the susceptibility to catching cold, or the cold habit is of very frequent occurrence in individual children, in some youths, and even in adults. There is no immunity acquired by surviving a coryza, a pharyngitis or a bronchitis; in fact, ordinarily, the person is at least temporarily more susceptible to taking or developing a fresh cold. This may not be quite true of an influenza or grip cold, because many persons have a real or pseudogrip attack early in the fall or winter and are then more or less immune from acute attacks during the rest of that season; but there seems to be no doubt that the influenza bacillus leaves a patient temporarily, at least, more susceptible to other more dangerous germs, as the pneumococcus or tubercle bacillus. Consequently, besides the immediate debility that an acute cold causes, the possibility of opening the way for the entrance of more serious disease should cause every cold to be considered seriously and treated energetically. Also, it should be the object of every mother, nurse, family physician, schoolteacher, medical inspector, board of education and board of health to inaugurate every means possible to prevent colds, that is, to develop the resisting power of the individual; to see that the child is properly clothed; to see that the house and schoolroom air is as free as possible from dust and germs, and that it contains the proper amount of moisture, and to take measures to prevent individual contagion and widespread irritation of the upper air passages from irritants in the air of buildings and localities.

While it is asserted by some that acute colds are always due to germs of some kind, it is conceivable that a too dry atmosphere, which is the condition in so many houses to-day, may so irritate or congest the nostrils as to allow the least irritant to cause at first a simple inflammation of the mucous membrane, which congested area may later pick up and harbor, or cease to kill, germs. It seems to be an established fact that good outdoor air does not predispose to colds as much as indoor air, and it is a fact that persons whose occupation is indoors are more liable to have colds than those whose occupation is outdoors. Whether or not every cold is due to a contagium or to a germ, chilling, whether indoors or outdoors, certainly predisposes to colds. It is quite probable that chilling of the surface of the body congests the inner organs and possibly the mucous membranes of the air passages. If the mucous membrane of the nose is congested, it more readily becomes inflamed by irritation or by germs.

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[1] Vaughan, Victor C.: The Phenomena of Infection, The Journal A. M. A., Feb. 21, 1914, p. 583.

To repeat, every cold, especially in a young child, should be considered serious. The possibility and the frequent occurrence of complications such as middle-ear inflammation, inflammation in one of the accessory sinuses of the nose, broncho-pneumonia or lobar pneumonia must always be a subject for consideration and prevention if possible. Colds and throat infections are also likely to cause enlarged cervical glands and perhaps enlarged bronchial glands. Any one or more of these glands may become infected with tuberculosis. Again, most colds, if not all, are contagious, and are transmitted by contact through families or close associates, and are especially spread by contact in schools.

The first step in the prevention of colds is to ascertain if the child properly breathes through its nostrils. Adenoids and greatly enlarged tonsils should be operatively treated. Hypertrophied mucous membrane or deformed nostrils should be surgically treated, if deemed advisable. The nutrition of the child must be good; if a child is underfed, he must receive more food. If a child is anemic, he must be properly treated with fresh air, good food and iron. Any chronic disease must be discovered. Swabs should be taken from the nose and throat, and cultures made to ascertain if the child is harboring a recognizable pathogenic germ.

ACUTE CORYZA

This acute nasal catarrh, often called a "cold in the head," is of frequent occurrence in some regions, especially near the seacoast, and occurs repeatedly in certain persons who seem to have a susceptibility to inflammation in the nose. Some persons cannot be exposed to a single draft on any part of the body without an acute coryza starting. Whether their mucous membranes are in such a condition as to allow a recurrence of inflammation from dust irritants or from the congestion caused by chilling, or whether they more or less constantly harbor germs which cause another acute infection, if the mucous membrane is again congested, is a question that has not yet been positively determined. It is supposable, however, that while most acute nasal catarrhs are due to infectious germs, more or less chronically hypertrophied mucous membrane and more or less sluggish circulation in this membrane may allow simple non-infectious catarrhs to occur when irritation of any kind is applied. Other persons who do not have this susceptibility may become chilled, may be subjected to violent cold, damp winds, and may even get wet and still never develop a nasal catarrh. Just as large tonsils more readily catch germs and become diseased, or more readily harbor germs and have recurrent inflammations, so hypertrophied mucous membrane of the nostrils becomes susceptible to reinfection or to reirritation. Frequent acute colds, more or less constant subacute inflammations, or chronic catarrh may result from such a condition.

Some persons are susceptible to certain kinds of irritants, whether it be a particular kind of dust, a particular kind of pollen from plants, or the emanations or odors from stables, horses, etc. If this susceptibility is in excess, or occurs at certain times of the year, the patient becomes a so-called hay-fever or rose-fever sufferer, and then shows symptoms of anaphylaxis.

The pathology of any acute mucous membrane inflammation is divisible into stages, the first being that of congestion and dryness of the surface. With this congestion there is swelling due to dilatation of the blood-vessels and more or less erection of the tissue, and with this swelling, if the mucous membrane is in a narrow canal, there is more or less obstruction, with discomfort, or even pain.

The next stage of the mucous membrane inflammation is the outpouring of a more than normal amount of mucus. The surface of the membrane then becomes moist, and the pain or discomfort becomes less as the tissues become less congested, owing to more or less extravasation of watery secretion and white blood-corpuscles which sooner or later may become pus. This extra secretion is propelled by gravity or by cilia or by voluntary expulsive methods to some external orifice, and the patulency of the part gradually returns. If this inflammation persists the secretion becomes more and more purulent. With a good outlet, and where the irritating and purulent secretions are not too long retained, the tendency of the mucous membrane is to recover, the pus gradually disappears, the secretion becomes mucopurulent, then mucus but in an abnormal amount, and finally the mucous membrane becomes normal, with its normal amount of mucous secretion. However, for some time this membrane is more susceptible to recurrences of inflammation.

The mucous membrane of the nose and throat in some persons may become abnormally dry. This condition is more difficult to treat, and even prolonged treatment may not cause it to become normal. Such persons have what is termed dry catarrh, and unless great care is taken, retain dry strings or plaques of secretion that putrefy and cause a disgusting odor to the breath, a condition termed ozena.

With a localized acute inflammation of the mucous membrane there may or may not be fever, depending on the susceptibility of the individual to an irritation, some persons developing fever readily, others having no fever except under serious provocation.

Applying this pathology to an acute coryza, it is readily understood, with a damming up of the passages from congestion and secretion, that germs, both by their own movements and by pressure, may migrate or be forced into some of the sinuses surrounding the nostrils, and the frontal sinuses are those that most frequently suffer. This is the cause of the frontal headache from the congestion which occurs with most colds, and of an actual frontal sinusitis when infection actually enters these regions. If the same inflammation occurs in the nasopharynx, the mouths of the eustachian tubes may become blocked, and middle ear congestion from aspiration of the air is caused. Also the germs of infection may migrate up these tubes and middle ear inflammation develop.

(To be continued)

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SATURDAY, JANUARY 2, 1915

DEATHS OF PHYSICIANS IN 1914

During 1914 the deaths of 2,205 physicians in the United States and Canada were noted in The Journal. Reckoning on a conservative estimate of 153,000 physicians, this is equivalent to an annual death-rate of 14.41 per thousand. For the twelve previous years the death-rates were as follows: 1913, 14.64; 1912, 14.13; 1911, 15.32; 1910, 16.96; 1909, 16.26; 1908, 17.39; 1907, 16.01; 1906, 17.2; 1905, 16.36; 1904, 17.14; 1903, 13.73, and 1902, 14.74. The average annual mortality for the period from 1902 to 1914 inclusive was therefore 15.71 per thousand. The chief death causes in the order named were: senility, heart disease, cerebral hemorrhage, pneumonia, accident and nephritis. The age at death varied from 23 to 99, with an average of 60 years, 11 months and 6 days. The general average of age at death since 1904 is 59 years, 9 months and 19 days. The number of years of practice varied from 1 to 75, the average being 33 years, 9 months and 29 days. The average for the past eleven years is 31 years, 11 months and 22 days.

Causes of Death.—There were 225 deaths assigned to general diseases; 229 to diseases of the nervous system; 296 to diseases of the circulatory system; 145 to diseases of the respiratory system; 93 to diseases of the digestive system; 125 to diseases of the genito-urinary system; 3 to diseases of the skin; 3 to diseases of the bones; 411 to senility; 27 to suicide; 111 to accident; 13 to homicide, and 79 after surgical operations. Among the principal assigned causes of death are senility, 411; heart disease, 211; cerebral hemorrhage, 185; pneumonia, 124; accident, 111; nephritis, 108; malignant disease, 56; tuberculosis, 48; appendicitis, 36; diabetes, 33; suicide, 27; septicemia and arteriosclerosis, each 25; angina pectoris, 23; typhoid, 17; gastritis, 14; myocarditis and homicide, each 13; cirrhosis of liver, 11; pernicious anemia, 10; endocarditis, 9; meningitis, 8; rheumatism and cholecystitis, each 7; bronchitis, 6; influenza, locomotor ataxia and scarlet fever, each 5; erysipelas, tetanus, pellagra, general paralysis of the insane, aneurysm, intestinal obstruction, peritonitis, Hodgkin's disease and mastoiditis, each 3; dysentery, syphilis, drug addiction, mental alienation, pleurisy and carbuncle, each 2 deaths, and malaria, small-pox, plumbism, chorea, embolism, ulcer of stomach, ulcer of duodenum, hernia, Addison's disease and retropharyngeal abscess, each 1 death.

The causes assigned for the 111 deaths from accident were: automobile, 25; falls, 17; poison, 10; automobile and railway, 9; railway and drowning, each 8 (of the latter, three were drowned in attempting to save lives); street car, 6; fracture of hip, 5; asphyxiation, firearms and sunstroke, each 4; burns, by animals, freezing and lightning, each 2, and explosion, runover and runaway, each 1. The 27 physicians who ended their lives by suicide selected the following methods; firearms, 13; poison, 10 and asphyxiation, strangulation, cutting instruments and cause not stated, each 1. Of the 13 homicides, 10 were due to firearms, 2 to clubbing or beating and 1 to stabbing. Of these, 4 occurred in feuds or affrays.

Ages.—Of the decedents, 61 were between the ages of 23 and 30; 199 between 31 and 40; 319 between 41 and 50; 432 between 51 and 60; 477 between 61 and 70; 404 between 71 and 80; 193 between 81 and 90; while 21 were more than 90 years of age. The greatest mortality occurred at the age of 62, when 68 deaths were recorded, at 70 with 61 deaths; at 59 with 59 deaths; at 54 and 55 with 58 deaths each; at 74 with 54 deaths, and at 69 when 51 died. There were 7 deaths each at 91 and 92; 3 at 95; 2 at 93, and 1 death each at 94 and 99.

Years of Practice.—By periods of ten years, the physicians died as follows: in the first decade, 162, of whom 7 had been in practice less than one year and 12 less than two years; in the second decade, 304; third decade, 421: fourth decade, 553; fifth decade, 443; sixth decade, 225; seventh decade, 84, and eighth decade, 5, three of whom had been in practice 70 years and one each 71 and 74 years.

Military Service.—During the year, 275 died who had served in the Civil War, and of these 90 had followed the Lost Cause; 83 were medical officers of United States Volunteers, 2 were medical cadets, 10 served in the hospital corps and 2 had been army nurses. There were 2 veterans of the Mexican War; 2 had served in campaigns against the Indians; 17 had been in the Spanish-American War and 7 had been medical officers in foreign wars. The Army lost 9 officers, one of whom was surgeon-general, 3 members of the Medical Reserve Corps and 8 contract or acting assistant surgeons. The Navy lost 12 medical officers, the Public Health Service 10 officers, and the Organized Militia 28 medical officers, of whom 9 had attained the grade of surgeon general.

Medical Positions.—Medical colleges sustained the loss of 146 professors, lecturers, instructors and demonstrators; hospitals lost 290 members of staffs; municipalities, townships and counties, 165 health officers, and school boards or boards of education, 57 members. There were 29 deaths of members of state boards of health, medical examination and registration and charities; 29 of coroners and medical examiners and 84 of railway surgeons.

Civil Positions.—Of those who died, 1 had been a member of Congress; 1 an ambassador; 7 members of state senates; 39 members of the house of representatives; 39 had been mayors; 25 aldermen; 39 had served in various civil positions; 14 had been postmasters; 20 editors of medical or lay journals; 11 had been clergymen, of whom 2 were foreign missionaries, and 6 had been attorneys.

THE FOURTH CENTENARY OF VESALIUS

Amid these stirring times when the invasion of Belgium and the news of the destruction of Louvain—an ancient seat of learning—have been proclaimed far and wide, we recall the name of an illustrious Belgian man of science whose work has marked an epoch in the history of medicine. The week just closing celebrates the four hundredth anniversary of the birth of Andreas Vesalius, the father of modern anatomy. Born in Brussels on the last day of the year 1514 of an ancestry of physicians and learned men, from whom he inherited a leaning toward scientific pursuits, Vesalius studied at the University of Louvain, later at Paris, again at Louvain and in Italy. He died in 1564.

To appreciate the service which Vesalius rendered to the cause of science, it is necessary to remember that medicine in the sixteenth century was still under the dominance of the doctrines of Galen. When one recalls the almost undisputed sway of Galen's influence for more than a thousand years it is easier to understand how difficult must have been the path of the reformer and how seemingly hopeless the attempt to overthrow the blind adherence to authority. The great importance of Vesalius lies in the fact that he succeeded, where others had failed, in inaugurating a new era of observation and reason. He dared to dispute the words of his masters and to demonstrate directly on the cadaver the error of numerous anatomic claims of medieval medicine. If the anatomist of antiquity stated that the lower jaw-bone of man is divided, as it is in many mammals, Vesalius was ready to prove by dissection that in the human body it is actually a single bone. He could show on the human subject that the sternum has three parts instead of the alleged eight. He found no need of defending the dictum that the thigh-bones were curved in accordance with Galen's teaching. As for the accepted dogma that man should have one less rib on one side, because of familiar scriptural accounts, Vesalius preferred to dispute the contention of the theologians.

The careful study of descriptive anatomy by Vesalius and his successors, in the words of Sir William Osler, restored to men the lost art of clear, independent vision. The slavish obedience to authority which characterized the thought, and more particularly the methods, of the Dark Ages, received a setback. From the point of view of the literature of the medical sciences, special mention should be made of the publication of the book by Vesalius which laid the foundation of modern biologic sciences. This great classic on the structure of the human body, entitled "De Humani Corporis Fabrica," appeared in Basel in 1543, and marks the beginning of modern anatomy. Evidently sound knowledge of structure was necessary before any permanently tenable conclusions respecting the functions of the body could be drawn. In this respect the descriptive text of Vesalius was the forerunner of the subsequent developments in physiology inaugurated by William Harvey.

No reference to the masterpiece of Vesalius would be complete without a tribute to the splendid drawings and highly artistic plates with which the work was illustrated. Just at the present time when some emphasis is again being placed on the quality of the illustrations with which modern texts are being supplemented, it is interesting to note that for executing his plates Vesalius secured the services of a Belgian artist, John Stephen de Calcar, said to be a gifted pupil of Titian.

In estimating the claim of Vesalius to renown, it has well been said that what he did was not so much to discover great truths as it was to overthrow dependence on authority and reestablish the scientific method of ascertaining truth. "The spirit of progress," Locy writes, "was now released from bondage." And with his characteristic felicity of exposition Sir Michael Foster adds: "He taught in such a way that his disciples, even when they thought him greater than Galen, never made a second Galen of him; they recognized that they were merely following his teaching as a whole when they appealed to observation to show that in this or that particular his teaching was wrong. After him, backsliding became impossible; from the date of the issue of his work onward, anatomy pursued an unbroken, straightforward course, being made successively fuller and truer by the labours of those who came after."

Last April a conference was called under the auspices of the Société des Amis de l'Université de Paris, at the Sorbonne, to consider the subject of the fourth centenary of the great anatomist.[1] Vesalius died on one of the Ionian Islands, where he was landed during a return trip from a pilgrimage to Jerusalem after he had been compelled, it is said, to make a pilgrimage to the Holy Land to clear his soul of sacrilege because of a post-mortem examination made by him. It was intended to erect a monument last August under the auspices of the Belgian government, on the island of Zante where Vesalius died. We hope that when the present hostilities are over some fitting tribute may still be made possible to commemorate the man who placed the structure of the human body in a new light.

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[1] The Fourth Centenary of Vesalius, Paris Letter, The Journal A. M. A., May 2, 1914, p. 1414.

STOMACH BITTERS

The prescription of "bitters" of various sorts belongs to those inherited procedures in practical medicine that antedate the modern period of scientific criticism and therapeutic skepticism. Why they are ordered, or what they really accomplish for the person who takes them, has usually either been answered in only the vaguest terms, or overlooked entirely by teachers of therapeutics. As a rule, these "bitters" are believed to stimulate the appetite. Bitters have even been grouped into classes, such as "pure bitters," of which calumba is an example; astringent bitters, to which the decoction of cinchona belongs, and aromatic bitters, including cascarilla or orange. Persons who eat too much and exercise too little were at one time wont to take "sherry and bitters" before dinner "to stimulate the appetite."

So far as the reputed action of bitters is subjective, producing an impression due to suggestion on the individual rather than to any real pharmacologic action of the drugs involved, it is not easy to test the hypothesis of their efficiency in a convincing experimental way. Carlson[1] and his collaborators at the University of Chicago have lately pointed out that the generally accepted assumption of an increased appetite and hunger produced by bitters might result in a variety of ways. The stomachics may directly inaugurate or augment hunger contractions of the empty stomach, or hasten the reappearance of gastric hunger contractions by facilitating secretion and peristalsis, and final emptying of the stomach. They may augment the appetite directly by stimulation of gustatory and other sensory nerves of the mouth, esophagus, or stomach. Finally, the bitters might even be conceived to facilitate the impulses from the mouth so as to bring feeble hunger and appetite sensations more prominently into consciousness.

Appetite and hunger are by no means identical sensations. The relation of bitters to the sensation of hunger is amenable to experimental investigation in view of the now established facts in relation to the genesis of the latter.[2] The hunger sensation is evidently produced by certain types of contraction of the empty stomach. These can be recorded accurately. Hunger pangs are absent so long as the empty stomach is relatively atonic and quiescent.

The Chicago investigators[1] have now studied the effect of such bitters as the tinctures of gentian, quassia, calumba, humulus, condurango, and the elixir of quinin, strychnin, and iron on the hunger sensation in man and animals. The influence of the bitters in the mouth and in the stomach was tested separately. When they are introduced, in therapeutic quantities, directly into the stomach so as not to come into contact with the mouth or esophagus, these drugs have no direct action whatever on the hunger mechanism. When quantities sufficiently large to produce a demonstrable effect are introduced in this fashion, the action is always in the direction of inhibition. Introduced into the mouth, the action of stomachics and bitters is like that of all sapid substances. They stimulate the taste organs and nerves of general sensation in the mouth, and cause reflex inhibition of the gastric hunger contractions. It will thus be seen that the bitters have no effect whatever in the way of augmenting hunger contractions and the attendant sensations.

It is conceivable that aside from the possibilities already described, the "bitter tonics" are capable of exerting a favorable action on the secretion of the gastric juice, and thereby promoting the progress of digestion in the stomach. This question likewise has been put to the direct test of experiment by Carlson and his collaborators. From the facts reported in this issue of The Journal,[3] the bitters have shown nothing to commend them from the standpoint of increasing digestive efficiency. Whether introduced into the mouth or directly into the stomach, they produced no changes in the acidity or in the pepsin concentration of gastric juice collected either in man or in animals.

This does not exhaust all the possibilities of explanation for the alleged value of these stomachics, especially in digestive disorders. Nevertheless it seems settled that neither the hunger sensation nor the gastric secretory mechanism is affected in the way that many have been led to suppose. The experiments of Carlson were done on normal individuals, whereas bitters are usually prescribed in anorexia arising in relation to alimentary disorders. To postulate some different response in the pathologic as contrasted with the normal individual is a favorite attitude in support of inexplicable therapeutic claims. The possibility must, of course, be admitted; but if direct tests are made on suitable subjects of disordered digestion, we venture to predict, with Carlson and his co-workers, that the results will be the same as those reported on normal men.

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[1] Carlson, A. J.; van de Erve, J.; Lewis, J. H., and Orr, S. J.: Contribution to the Physiology of the Stomach, XVI, The Action of the So-Called Stomachics or Bitters on the Hunger Mechanism, Jour. Pharmacol. and Exper. Therap., 1914, vi, 209.

[2] The Call of the Empty Stomach, editorial, The Journal A. M. A., Oct. 4, 1913, p. 1300; The Voracity of Certain Diabetics, Feb. 21, 1914, p. 621; New Facts About Hunger, July 11, 1914, p. 169.

[3] Carlson, A. J.: Contributions to the *Physiology* of the Stomach, XXI, The Supposed Action of the Bitter Tonics on the *Secretion of* Gastric Juice in Man and Dog, The Journal A. M. A., this issue, p. 15.

These new investigations on the possible functions of stomachics and tonic bitters serve to dispel another of the long-established beliefs in the potency of certain popular remedies. As Carlson has well said, even if the therapeutic doses of such tonics are harmless, their use contributes to the drug habit which emphasizes the desire to "take something" instead of "do something." The patient may perhaps be deluded into the belief of "being done good," and may exhibit the benefit of psychologic medicine. After all, the really efficient agencies for improvement in alimentary and nutritive disorders are in most instances not to be found in suggestion or stimulation, but in a well-ordered regimen of work, rest, and diet.

VIEWS REGARDING PNEUMONIC PLAGUE

The outbreak of the great pneumonic plague in Manchuria a few winters ago afforded the first larger opportunity to study the pathologic anatomy of this disease and to examine histologically the lesions that are produced by it. To the earlier reports and particularly to those of the American investigators, Strong, Crowell and Teague,[1] are now added the notes collected by Dr. Wu Lien-Teh, director and chief medical officer of the North Manchurian Plague Prevention Service, and Prof. G. Sims Woodhead of the University of Cambridge, England.[2] They believe that the specimens examined by them afford evidence of the presence of an extremely acute septicemic condition in pneumonic plague. The heart is evidently affected by very active toxins. The liver shows typical examples of lesions produced by specific infective micro-organisms that give rise to toxic substances. The epithelium of the kidneys is modified by a similar toxic activity. It is stated that in the lungs the lesions are far less marked than one would expect were pneumonia the main or most important factor in the disease. The descriptions in the literature of the subject indicate that in plague at least two types of pneumonia, and perhaps even further modifications of these types, are to be dealt with. They differ materially from that set up by the *Diplococcus pneumoniae*, which was never found in the tissue sections.

The views of these latest investigators on the mode of infection is of more general interest. They conclude that in the Manchurian outbreak the amount of the infective material, that is, the dose of the plague bacillus, gaining access to the upper respiratory passages — to the tonsils, fauces, etc.— is of prime importance in determining the character of the septicemia or bacteriemia resulting from a pulmonary infection. It is suggested that in warm countries where the people live in the open and where the facilities and channels by which infection is communicated appear to be those provided by rats and fleas, and where the plague material is carried more directly from one patient to another, or from the rat, by the flea, to the human subject, the local reaction of the tissues and the bubo may prevent the extension of the bacteria, especially if the dose is small and the septicemic condition occurs at a comparatively late stage. If there is a good reaction of resisting tissues the disease may never become septicemic. If, however, the septicemia once develops, it is evident that the internal organs are affected much as in the pneumonic form of plague.

Applying their contentions directly to the Manchurian epidemic, which was at its height in the winter, Lien-Teh and Woodhead[2] argue that the facilities for the inhalation or ingestion of large numbers of plague bacilli were far greater than they can possibly be in warm countries where people live in the open. The patients, residing in badly ventilated houses closed because of the intense cold and artificially heated, may be regarded as living in highly infected incubators of the most approved kind. Septicemias are rapidly developed; and although the lung may in a certain proportion of cases be the primary seat of infection, the late lung symptoms observed seem to point to the occurrence of a secondary pneumonia in a certain proportion of the cases examined clinically.

We have already referred to Teague's views regarding the spread of pneumonic plague.[3] The essence of the contentions put forth in the contribution from the Cambridge pathologic laboratory consists in ascribing the fatal severity of the Manchurian epidemic to the fact that the dose of infective material was always massive and entered by always open and slightly resistant portals. Under such conditions the prognosis is bad. When the advance of the *Bacillus pestis* is so interfered with that not only a local, but a general immunity may be acquired before the bacilli can reach the blood in any considerable numbers, the virulence is greatly lessened.

WATER AS A GASTRIC STIMULANT

It is considered by many that water should be taken sparingly, if at all, during meal time. The recommendation to avoid the ingestion of an abundance of water along with the food is not without an underlying belief in its therapeutic propriety and helpfulness. A custom so well established must express some supposed efficiency of action. The basis for the widely circulated rule that water should never be drunk until long after a meal is eaten probably includes one or more of the following assumptions: 1. Drinking water while eating unduly dilutes or moistens the food, thereby obvi-

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1. Strong, Crowell and Teague: Philippine Jour. Sc., (B), 1912, vii, 203. Strong and Teague: Ibid., p. 173.

2. Lien-Teh, Wu, and Woodhead, G. S.: Notes on the Histology of Some of the Lesions Present in Pneumonic Plague, Jour. Path. and Bacteriol., 1914, xix, 1.

3. Atmospheric Temperature and Pneumonic Plague, editorial, The Journal A. M. A., March 7, 1914, p. 779.

ating a desirable degree of mastication and insalivation. 2. The water dilutes the gastric and other juices to an abnormal and undesirable extent. 3. The food materials are caused, by the large volume of water, to leave the stomach at an unduly early period in the gastric cycle, before the digestive changes that ought to be brought about in this organ have been satisfactorily inaugurated.

If in truth these phenomena were in whole or in part undoubtedly provoked by the ingestion of water with meals, alimentary disturbances might well be expected to follow. As a matter of fact, a large number of experimental data collected on both man and animals by Hawk and his collaborators have failed to disclose any impairment in the utilization of the foodstuffs under the influence of even exceptionally abundant intake of water at meals. This has been verified further by newer experiments of Orr[1] in Aberdeen. Indeed, Hawk goes so far as to suggest that the drinking of water with meals exerts even a desirable influence on a number of the most important of the activities and functions of the gastro-intestinal tract.[2]

Without considering in detail the various alleged beneficial effects, such as the decrease in the development of intestinal bacteria and the consequent diminution in the activity of the putrefactive micro-organisms, which are held to follow the liberal use of water with meals, we may appropriately consider one important phase of the question on which the features just cited are made to depend. Hawk has freely stated that the entrance of water into the stomach stimulates the flow of gastric juice. Not only this, but the juice as secreted has a higher concentration of acid than that produced previous to the entrance of the water. After stimulating the gastric secretion, the main bulk of the water very quickly enters the intestine, but it does not carry with it any appreciable part of the solids present in the stomach.

The assertion that water can function as a stimulant of gastric secretion is by no means a new one. The favorable action has repeatedly been demonstrated on animals, and only very recently by the Chicago physiologists Carlson, Orr and Brinkman.[3] In addition to such evidence, and to the indirect indication that water acts as a gastric stimulant in the human organism,[4] there is now offered direct proof obtained on man.[5] Bergeim, Rehfuss and Hawk note that water (ordinary or distilled), either cold (10.5 C., 50.9 F.) or warm (50 C., 122 F.), is a very strong gastric stimulant and in certain instances yields an acidity of over 100 (c.c. tenth-normal sodium hydroxid to neutralize 100 c.c of juice), in less than twenty minutes. As small a volume of water as 50 c.c. has been demonstrated to have a pronounced and immediate stimulatory power in the human stomach. In the average normal individual, water produces fully as great a stimulation (as measured by acidity and enzyme values) as does an Ewald test meal, and the acidity values follow a similar type of curve. A simple water meal might therefore be substituted in many instances for the Ewald meal, and has the additional advantage of demonstrating any food residues. It was impossible to demonstrate any pronounced glandular fatigue in the human stomach. Identical volumes of water introduced into the stomach of the same man at different times during the same afternoon yielded very similar acidity values. Under all conditions the increased acidity following water stimulation is accompanied by increased peptic activity, although the two types of values do not necessarily run parallel.

In one human subject the Philadelphia investigators obtained definite evidence that 500 c.c. of water left the stomach in from ten to twenty minutes after its introduction. The occasional efficiency of the stimulus is shown by the fact that at least 225 c.c. of gastric juice of relatively high acidity were secreted after an initial stimulus afforded by 50 c.c. of distilled water.

The stimulatory power of the water was not influenced in any uniform way by the volume of fluid introduced into the stomach. In some instances a small volume of water gave a pronounced stimulation, whereas in other tests the response was relatively less pronounced when a larger volume of water was employed. How radical the suggestions following from these newer gastric studies are is indicated by the proposal that since water stimulates the gastric glands to activity when no food is present in the stomach as well as when there is a digestive task to complete, it would seem a waste of "glandular energy" to drink water between meals. It would seem that water could best further the digestive plan when taken with meals.

A further outcome of the use of water as a gastric stimulant is the indication that the values (from 40 to 60) commonly accepted by clinicians as normal values for gastric acidity are undoubtedly too low. The acidity of the gastric juice secreted after water stimulation ranged from 50 to 120 (from 0.18 to 0.44 per cent. hydrochloric acid) with an average value of 77 (0.28 per cent. hydrochloric acid).

And It Is Still True.—". . . nothing can be more pernicious to the Health of the People, than a numerous Trade, which, to maintain itself, shall be urging the Vent of Physic in great Quantities to all Ages, Constitutions and Diseases."—R. Pitt, M.D., in The Crafts and Frauds of Physic Exposed, London, 1703.

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[1] Orr, J. B.: The Influence of Excessive Water Ingestion on Protein Metabolism, Biochem. Jour., 1914, viii, 530.

[2] A discussion of "The Relation of Water to Certain Life Processes and More Especially to Nutrition," was presented by Hawk before the American Philosophical Society in Philadelphia, Feb. 6, 1914; see Biochem. Bull., 1914, iii, 420.

[3] Carlson, Orr and Brinkman: Am. Jour. Physiol., 1914, xxxiii, 86.

[4] Wills and siology, Proc. Am. Soc. Biol. Chemists, 1910, ii, 23; Jour. Am. Chem. r Bitter xxvi, 158.

[5] Rehfuss, M. herap., 1 O., and Hawk, P. B.: Gastro-Intestinal Studies, II, The 1 pty Stoma y of Gastric Digestion, with a Description of Normal a he Vora urves, The Journal A. M. A., Sept. 12, 1914, p. 909. About Hu tration of the Stimulatory Power of Water in the Hu r. Biol. Chem., 1914, xix, 345.

Current Comment

THE NEW YORK TRIBUNE'S CAMPAIGN

These be parlous times for the medical faker. The New York *Tribune* recently entered the lists against the quack and the fraudulent "patent medicine" with an educational campaign that promises to have far-reaching effects. The motto of the *Tribune* is: "First to Last the Truth: News, Editorials, Advertisements." Naturally, living up to such a motto bars practically all medical advertising. But the *Tribune* has gone further. A few weeks ago it announced that it would guarantee its readers against loss or dissatisfaction through the purchase of any wares advertised in its columns. Such a step on the part of a daily newspaper is, we believe, unique. A few high-class magazines give their readers this protection, but, so far as we know, no newspaper has ever assumed such a task as that undertaken by the New York paper. As the *Tribune* says:

> Out of our armory of defences goes the comfortable old doctrine of *caveat emptor,* that favorite refuge of the newspaper whose hands are full of not over-clean advertising revenue. *Caveat emptor* is the strict letter of the law, but we shall never retreat behind it. In practice it means that the reader takes care while the newspaper takes the money. Under our system he does not have to take care. We will do the taking care for him.

Should newspapers over the country, generally, take this stand, it would sound the death knell of the fraudulent "patent medicine" industry. Imagine, if possible, a newspaper guaranteeing its readers against loss from taking "Pulmonol" or "Eckman's Alterative" for consumption, from taking "Swamp Root" or "Doan's Kidney Pills" for Bright's disease, from taking "Wine of Cardui" or "Lydia Pinkham's" for "female trouble," from taking Coutant's alleged cure for deafness, from using Plapao Pads for rupture, from taking any of the thousand and one wickedly exploited cures for cancer — imagine a newspaper that guaranteed its readers against "loss or dissatisfaction" carrying such advertisements! It isn't conceivable that any paper that had the interest of its readers sufficiently at heart to take the stand the *Tribune* has could, in the nature of the case, accept advertisements from fraudulent "patent medicine" concerns and quacks. Yet, as a moral principle, the new standard set by the New York *Tribune,* while so far in advance of the procession, is merely one of simple, elemental honesty. It is the stand that is taken by every honest man in business. The rapid change that is now taking place in the advertising world makes one optimistic. We believe that, before the present decade has passed, the position taken by the *Tribune* will be accepted as a matter of course by the majority of decent newspapers throughout the country. In the meantime, every right-minded citizen should throw the power of his influence behind those publications that are waging war against frauds and leading in the fight against those powers of evil that menace both public health and public morals. More power to the pen of the New York *Tribune.*

AN EARLY WORKER IN INDUSTRIAL HYGIENE

Nothing comes closer to actual humanitarianism than the prophylaxis of the ills caused by special occupations. Men must work to live, and if the work itself brings death, a vicious circle is created. Nov. 5, 1914, occurred the two hundredth anniversary of the death of Bernardino Ramazzini, the great leader in the study of the "hygiene of artificers." His name, like that of many noted medical men, is unfamiliar to most physicians of to-day. He was professor of the theory and practice of medicine in the historic school at Padua from 1682 to 1700. His chief work, "Health Preserved: I. On the diseases of artificers, which by their particular callings they are most liable to; with the method of avoiding them and their cure. II. On the distempers which arise from particular climates, situations and methods of life," is the work on which rests his claim to fame. This was translated, within a short time, into German, English, Dutch, Italian and French, and numerous editions were published. A German translation of his various medical works was published at Leipsic in 1828, and in 1912, F. Koelsch, chief of the factory inspection service in Bavaria, wrote a book describing Ramazzini's life and works. Professor Pogogeff of Moscow, founder of the museum of sociology there, organized an international exhibition of safety appliances in industry and for the prophylaxis of occupational diseases, to open in Moscow, November 5, but the war unfortunately put an end to all preparations. At Milan, however, the anniversary was celebrated with exercises at the Clinica delle malattie professionali, devoted exclusively to occupational diseases. The director of the clinic, Professor Devoto, delivered an address on Ramazzini's life and work before an audience of the working class and again before a medical audience, the address being published later in the *Lavoro,* a fortnightly periodical published by this enterprising clinic. A further honor to the great work of Ramazzini is the naming of the Italian periodical founded in 1907 by C. Biondi and L. Bovri, to advance the cause of social medicine, *Il Ramazzini.*

SAFETY IN THE MINING INDUSTRY

The report of the director of the Bureau of Mines for the year ended June 30, 1914, which has just appeared, shows a constant increase in the safety of workmen engaged in mining, though the loss of life is still great. During the year more than 3,500 men were killed and more than 100,000 injured in this industry. It is believed that one-half of the fatalities and three-quarters of the injuries were easily preventable, and much of the estimated twelve millions of money loss ultimately paid by the consumers should have been saved. Among the causes assigned for these casualties are mine explosions and mine fires, many of which were caused indirectly by electrical apparatus; the improper use of explosives and the use of improper explosives, directly or indirectly the cause of a large proportion of the fatal accidents, among which are accidents to shot firers; and injury to the health of the miners from poisonous gases given off by improper explosives, and from generally poor ventilation of the mines. The last is said to be true particularly of the metal mines, statutory provisions in regard to ventilation in the metal mining states being incomplete and inadequate, with no efficient system of ventilation generally in force. Although improvement has been made, there is still necessity for more extensive use of safety appliances. It is said that during the past five years through lack of such appliances more than 3,500 men have been killed and 20,000 seriously injured. To prevent injury to shot firers it is recommended that shots be fired by electricity from the outside of the mine and not in the present careless manner. The bureau has not only attempted to prevent coal-dust explosions, but also has devised means in the form of barriers loaded with stone dust for stopping such explosions after they have started, localizing them to the part of the mine in which they originate and thus saving miners in other parts. Improvements in explosives have also been made through the introduction of new types of low-temperature, quick-flame powders which may be used in the more dangerous mines. Instruction in mine safety and mine rescue work has continued, and the total number of miners trained by the bureau has now reached 25,000. First-aid stations have been established at hundreds of mines. The report says the states spend more money than the government for improvement in mining conditions, and the bureau complains that its work is handicapped by insufficient funds.

AID FOR DEVASTATED BELGIUM

In our news columns and in the London letters, we have mentioned frequently the pressing calls for aid to Belgium. In London a committee was formed, headed by Sir Rickman Godlee, to take up the care of needy physicians and surgeons in the little war-wrecked country. An appeal sent out by Professor Jacobs of Brussels describes conditions of destitution that are horrifying and almost unthinkable in their immensity. An American committee has been formed, consisting of many representative physicians and surgeons. Sunday, December 20, an organization meeting was held in New York. Dr. Howard Canning Taylor was elected secretary, and an executive committee was formed of which Dr. Frank F. Simpson, the treasurer, is a member. Dr. Bates, of the Commission for Relief in Belgium, has promised to distribute in Belgium without cost, food, surgical dressings, drugs, or instruments, and information is being gathered as to what is most needed. For the present, money contributions only are accepted. The treasurer, Dr. F. F. Simpson, Jenkins Arcade Building, Pittsburgh, to whom money should be sent, will publish each week a list of contributors. The cause is meritorious, the need pressing, the objects, brother physicians who are the unfortunate victims of circumstance. The American physician who helps in this crisis will aid to establish even more firmly the bond of brotherhood which has ever characterized men of science.

EXERCISE, BODY TEMPERATURE AND THE PULSE-RATE

Muscular exercise, even of a moderate sort, is attended by a number of conspicuous phenomena. The heart-beat becomes more rapid, the blood-pressure is raised, the temperature is elevated somewhat and pulmonary ventilation is increased. In bringing these useful functions into heightened activity a variety of factors are presumably involved. Ordinarily a rise in blood-pressure is attended with a slowing of the pulse; but after exercise the rise is accompanied by cardiac acceleration. The most important factor in the immediate quickening of the pulse-rate is doubtless the central nervous system, and presumably it operates by depression of the cardio-inhibitory center. The acceleration of the heart-beat does not cease immediately with the interruption of muscular effort, but commonly persists for a shorter or longer time. The return to the normal is almost always quicker in the trained than in the untrained person. Different physiologists have held more or less conflicting views respecting the cause of the persistent augmentation of the pulse. The Danish physiologist, Johansson, for example, has maintained that products of metabolism, arising as a consequence of exercise, are responsible for the quickening. Mansfeld has charged it to the rise in temperature of the blood flowing to the heart. Drs. Martin, Gruber and Lanman[1] of the Harvard Medical School argue that if persistent acceleration of the heart after exercise depends on the temperature of the blood, careful comparisons of body temperature and pulse-rate after exercise should show an interdependence between them. Moreover, the striking prolongation of the acceleration sometimes seen in untrained as compared with trained men should be correlated with a definite difference in the period of heightened body temperature. They have, therefore, made a careful comparison of the interrelation of the two factors in man with results which seem to show clearly that whatever may be the mechanism of the persistent cardio-acceleration of exercise, body temperature has little to do with it. Some other cause than the rise in blood temperature must be sought as the sustaining agent. It seems well established that variations in metabolic activity in man are accompanied by variations in heart-rate.[2] Whether heightened metabolic activity is the cause of an augmented pulse, or whether the two depend on a common antecedent stimulus, does not appear. Benedict and Cathcart[2] have noted that the metabolism, as measured by the oxygen absorption, continued high after exercise for periods comparable with those of augmented heart action. From the work of Martin, Gruber and Lanman, it also seems unlikely that the metabolic effects are directly dependent on an increase in the temperature of the blood. Other possibilities now need to be examined critically.

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[1] Martin, E. G.; Gruber, C. M., and Lanman, T. H.: Body Temperature and Pulse-Rate in Man After Exercise, Am. Jour. Physiol., 1914, xxxv, 211.

[2] Benedict, F. G.: Influence of Inanition on Metabolism, Carnegie Institution of Washington, Publication 77. Benedict, F. G., and Carpenter, T. M.: Metabolism and Energy Transformations of Healthy Man During Rest: Ibid., No. 126. Benedict, F. G., and Cathcart, E. P.: Muscular Work: Ibid., No. 187.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

ILLINOIS

Roentgen-Ray Equipment Installed.—A complete Roentgen-ray equipment has been secured at a cost of about $2,000, and will be installed in the new wing of St. Joseph's Hospital, Elgin next week.

Military Surgeons Elect.—At the annual meeting of the Association of Military Surgeons of the State of Illinois held in Chicago, December 28, the following officers were elected: president, Lieut.-Col. Jacob Frank, Chicago, surgeon-general of Illinois; vice-president, Captain Arthur F. Wilhelmy, Decatur, and secretary-treasurer, Brig. Gen. S. C. Stanton, Chicago (reelected).

Hospital Faces Burden of Debt.—At a meeting of the board of directors of the Monmouth Hospital, December 15, the physicians presented a formal communication requesting that action regarding the proposed change of management be deferred for a period of one year. This action of the medical men directly opposes the recommendation of the finance committee. The hospital at present faces a debt amounting to about $3,000 and without any probability of immediate payment.

Chicago

Zones of Quiet.—A number of physicians appeared before the common council health committee, December 21, to present appeals for the establishment of zones of quiet around all hospitals.

Morals Board Appointed.—The names of thirty persons recommended to the mayor by the vice commission to aid his choice of the newly created morals commission included the following physicians: Drs. William A. Evans, W. J. Hickson, Sidney Kuh, Willis O. Nance, William Healey and Clara Seippel.

Low Mortality for Chicago.—The records of the health department for the year of 1914 show that the death-rate was 14.17 per 1,000. This is 3.6 per cent. less than the average yearly rate for the last decade and 6.2 per cent. less than the rate for the previous year. The chief reductions are in deaths from typhoid fever and from infantile diseases.

Polish Physicians Meet.—The Chicago Polish Medical Society held its annual meeting December 18, and elected Dr. Wladyslaw A. Kuflewski, president; Dr. Thaddeus Z. Xelowski, vice-president; Dr. Alexander Pietrzykoski, secretary, and Dr. Stanislaus Boguszewski, treasurer. Resolutions were adopted to aid the widows and orphans of Polish physicians in Poland and a subscription list has been opened for this purpose by the secretary.

The Cost of Tuberculosis.—Dr. Theodore B. Sachs estimates that tuberculosis costs an economic loss of more than $30,000,000 a year in Chicago. The opening of the Chicago Tuberculosis Sanatorium in February, will, he hopes, tend to reduce this loss by the reclaiming of many victims. The institution will have, at its opening, a capacity of 650 beds and by the end of the year the capacity will be increased to 950. It is provided with a maternity division, a department for children, a nursery, open air housing and comprehensive laboratories. The institution is located on a tract of 160 acres of land at Peterson, Crawford and Bryn Mawr avenues, and already has about 35 buildings, one of which has a frontage of 1,000 feet.

INDIANA

New Societies Organized.—The Indianapolis Pediatric Society has recently been organized with Dr. James H. Taylor as president, and Dr. E. B. Mumford, secretary.——Kendallville Medical Society was recently organized with Dr. Cyrus A. Gardner, president, and Dr. Harold O. Williams, secretary-treasurer.

Clinic at Anderson.—Physicians of Anderson met with a committee from the Anderson Council of Women, December 15, to confer regarding the advisability of establishing a free clinic in Anderson. There was no question regarding the necessity of the clinic, but its site was discussed and eventually left to a committee of six to investigate and report at a meeting January 6.

Personal.—Dr. Albert C. Kimberlin, Indianapolis, fell December 17, spraining his ankle and probably fracturing bones of his left foot.——Dr. Blanchard B. Pettijohn, Indianapolis, has resigned his commission as first lieutenant of the Medical Corps, Ind. N. G.——Dr. Tiffin J. Shackelford, Kokomo, who has been seriously ill in Chicago, is now convalescent at Muncie.——Dr. Frank L. Truitt has been elected medical director of the Reserve Loan Life Insurance Company, Indianapolis.——Dr. Richard A. Poole, coroner of Marion County, has appointed Drs. Paul F. Robinson, Edwin S. Knox and Herbert T. Wagner as deputy coroners.——Dr. Harry M. Hosmer, Gary, who met with an accident December 11, which it was thought would result in the loss of both eyes, is convalescent and will regain his eyesight.——Dr. Augustus L. Marshall, superintendent of the Indianapolis City Dispensary, suffered an electric shock and burns of the right hand, December 15.——Dr. Thomas L. Sullivan, Jr., has been appointed superintendent of the Indianapolis City Hospital.——Dr. Lee M. Barney, formerly of Elkhart, but more recently of Miami, Fla., has been awarded damages of $41,500 from the casualty companies on account of the loss of sight from a chemical explosion which occurred while he was making experiments in his laboratory.——Dr. A. Golding Chittick, Frankfort, has been appointed health officer, vice Dr. George W. Brown, resigned.

Two Units of New City Hospital Opened.—Two units of the new Indianapolis City Hospital are now partly in use. They represent the most modern type of hospital construction and embody several features which are unique. The mural decorations previously mentioned (The Journal, Dec. 5, 1914, p. 2049) are in part completed. The panels painted by Mr. T. C. Steele for the men's ward are of the best type of American art. Mr. Otto Stark has completed the "festival of toys" for the children's ward; a rising young colored artist, Mr. William Scott, has done an immense amount of work in the corridors. The value of these decorations can be calculated only in the pleasure which thousands of sufferers will derive from them. The cost of the two Burdsal units, approximately $350,000, is a monument to the economy of the administration. All floors are built with subfloors, making possible instantaneous access to heating, ventilating and plumbing apparatus. This innovation is a move toward future economy that will be a reminder of the forethought which planned it. The entire cost of the many feet of mural decorations has been slight, and the results are delightful. The hospital is inviting and pleasant, and the city authorities, headed by Mayor Bell, are being widely commended for this unique advance in hospital construction.

NEW YORK

Personal.—Dr. Garret K. W. Schenck, Rockaway Beach, has been appointed assistant chief surgeon of the Polyclinic Hospital, Manhattan.

Appropriation for Sanatorium Maintenance.—The board of supervisors of Tompkins County appropriated at its December 16 meeting $8,000 for the maintenance of the Meany Sanatorium at Taughannock Falls. This sum, with the $2,800 left over from last year's appropriation, makes available $10,800 at the beginning of the fiscal year, February 1.

New State Sanitary Code.—The Public Health Council of the State Health Department has adopted regulations which will become effective on March 1. These regulations have the same force as a statute enacted by the legislature and make violation a misdemeanor. Among other things the code puts a ban on the common drinking cup, the common towel, the unclean barber cup and hair brush, spitting on the streets and in public buildings, and insists on special regulations of manicurists and chiropodists.

New York City

Personal.—Dr. Richard Derby, who has been in the American Ambulance Hospital, Neuilly, France, has returned to his home and will resume his work at St. Luke's Hospital.——Dr. John H. Parker, who has been ill with septicemia due to a glass wound of the knee, is reported to be improving.

Disinfection of Cars.—The Interborough Rapid Transit Company writes the health department that they have been studying the efficiency of various disinfectants and their conclusions coincided with those of representatives of the department who have questioned the value of disinfectants for car cleaning purposes. They have therefore arranged to discontinue the use of disinfectants for this purpose, but are making an effort to cleanse cars by mechanical means and frequent airing.

MEDICAL NEWS

Decrease in Street Car Accidents.—There was a marked decrease in the number of street car accidents during the month of November, 1914, as compared with the same period of 1913. The number of persons killed in November, 1913, was 31, against 18 for November, 1914. The total number of accidents for November, 1913, was 3,557, while for November, 1914, it was 3,153. The falling off in the number of accidents is attributed to the near-side stop of street cars which went into effect on November 1.

Campaign Against Habit-Forming Drugs Progresses.—The campaign against illegal sellers of drugs is being energetically prosecuted. Within the space of three days three sources furnishing large amounts of narcotics have been located. The largest supply seized in years was taken on December 21 on the lower East Side. It was valued at $10,000 and included 150,000 pills and 37 boxes of powder. At about the same time it was learned that steamships from Liverpool were bringing over supplies of drugs and a search of the *Adriatic* which had just docked was found to have brought 100 small cans of opium selling at $50 per can. In the Harlem district six arrests have been made of persons selling cocain to schoolchildren; these individuals were held in bail for amounts from $500 to $2,500.

OHIO

State Board Election.—At the annual meeting of the Ohio State Board of Health held in Cleveland recently, Dr. Henry T. Sutton, Zanesville, was elected president; Dr. William T. Miller, Cleveland, vice-president.

Personal.—Dr. George W. Crile, Cleveland, has started for Europe for work with the American Ambulance, Paris.——Dr. William H. Wood, Smithfield, was operated on recently in Chicago for the removal of a cataract.——Dr. Alexander Hitchcock, Port Clinton, is reported to be seriously ill as the result of a cerebral hemorrhage.——Dr. W. T. Barger, Cleveland, has accepted a permanent position on the medical staff of the Jackson Health Resort, Dansville, N. Y.——Dr. H. E. Ward, Custar, is reported to be seriously ill at his home as the result of an automobile accident.

Antituberculosis Items.—R. G. Patterson, secretary of the State Antituberculosis Society, at a meeting of the local society at Chillicothe, recommended the erection of a district hospital with a capacity of fifty beds at an expense of $50,000.——Plans are in consideration for the erection of a division to the Butler County Tuberculosis Sanatorium which will allow the accommodation of at least twenty-five more patients and an expense of not more than $3,500.——Springfield Lake Sanatorium for Tuberculosis, erected by Summit, Portage, Mahoning, Stark and Columbiana counties, near Akron, at a cost of $280,000, was formally opened January 1. The institution will accommodate 150 patients.

Health Federation Formed.—For the support of legislation designed to promote public health and oppose measures deemed to be harmful, the Ohio Public Health Federation has been organized, the members of which are the Ohio Society for the Prevention of Tuberculosis, the Ohio State Medical Association, Ohio State Eclectic Medical Association, Homeopathic Medical Society of Ohio, Ohio State Dental Society, Ohio State Pharmaceutical Association and the Ohio State Veterinary Association. Heads of the state departments which have public health functions will cooperate with the federation. The State Board of Health, State Blind Commission, State Medical Board and the State Board of Pharmacy are so represented. The following are officers of the federation: president, Dr. Willard B. Carpenter, Columbus; secretary, Prof. Edward Spease; assistant secretary, G. V. Sheridan; and treasurer, Dr. John H. J. Upham, Columbus.

GENERAL

Lecture at Army Medical School.—Dr. Harvey Cushing, professor of surgery in Harvard University, delivered an illustrated lecture on "The Portraits of Vesalius," on the evening of December 29 at the Army Medical School, Washington.

National Leprosarium.—Surgeon-General Rupert Blue, U. S. P. H. S., has recommended to the commerce committee of the house of representatives the establishment of a national leprosarium, under the control of the public health service. There are now 146 cases of leprosy on record in the United States.

Eastern Pediatrists Hold Election.—At the annual meeting of the New England Pediatric Society held in Boston, December 4, the following officers were elected: president, Dr. Edward M. Buckingham, Boston; vice-president, Dr. Edmund F. Curry, Fall River, Mass., and secretary-treasurer, Dr. Richard M. Smith, Boston.

Southwestern Practitioners Meet.—At the annual meeting of the Southwestern Medical and Surgical Association held in El Paso, Tex., December 11 and 12, the following officers were elected: president, Dr. John E. Bacon, Miami, Ariz.; vice-presidents, Drs. Jesse R. Gilbert, Alamogordo, N. Mex., and James Camp, Pecos, Tex.; secretary-treasurer, Dr Charles P. Brown, El Paso, Tex. El Paso was selected as the place of meeting for next year.

Indian Service Notes.—Dr. J. A. Murphy, medical supervisor, Phoenix, has gone to Sacaton, Pema Agency, for several weeks.——A new hospital for the Indians of northeastern Minnesota, the cost of which was provided for in the last Indian appropriation, is to be erected at Cloquet, Minn.——Dr. Frank J. McKinley, Pala, Cal., has been transferred as superintendent at Schurz, Nev.——Dr. Peter A. Slattery has been transferred from Fort Bidwell, Cal., to Acomita, N. Mex.

Tri-State Medical Society Meeting.—At the annual meeting of the Tri-State Medical Society of Arkansas, Louisiana and Texas, held at Shreveport, La., December 8 and 9, the following officers were elected: president, Dr. William G. Hartt, Marshall, Tex.; vice-presidents, Drs. Edwin L. Beck, Texarkana, Tex.; Oscar Dowling, Shreveport, La., and Edward H. Martin, Hot Springs, Ark.; secretary-treasurer, Dr. Jacob M. Bodenheimer, Shreveport, La. (reelected). The next meeting will be held in Marshall, Tex.

Canal Zone Physicians to Meet in San Francisco.—The Medical Association of the Isthmian Canal Zone announces that at the November meeting of the society it was decided to hold an extraordinary session at the Panama Pacific Exposition, San Francisco, some time during the medical period, and preferably about June 14, and the society requests that all former and present members will endeavor to assemble at San Francisco during that week, prepared to support those in charge of the session. Members living near San Francisco are asked to communicate with the officials and express their intentions as regards attendance.

Bequests and Donations.—The following bequests and donations have recently been announced:

St. Louis Medical Society, $42,000 left in trust by the administrators of the estate of Mrs. Francisca Bartscher, mother of the late Dr. Hugo Bartscher, as a memorial of her son.

For the relief of the aged poor of Indianapolis, the bulk of the estate valued at $250,000, by the will of Mr. William L. Higgins.

German Hospital, New York, $5,000 by the will of Joseph Kuder.

St. John's Guild, New York, for the benefit of the Sea Side Hospital, $10,000 by the will of Laura V. Rhinelander.

St. Luke's Hospital, New York City, and Society for the Relief of the Destitute Blind, each $5,000 by the will of Miss Augusta Jones.

Maimonides Hospital, Chicago, $2,000 appropriated by the Federated Orthodox Jewish Charities.

Chicago Lying-In Hospital, $10,000, the proceeds of an opera performance at the Chicago Auditorium, December 18.

The Lane Lecture for 1915.—Dr. Frank Billings, Chicago, has been selected to deliver the Lane Lecture for 1915. He is the fifth American to be so honored. A list of the previous lecturers follows:

1896. Sir William Macewen, M.D., Regius Professor of Surgery, University of Glasgow. "Surgery of the Brain."

1897. Christopher Heath, F.R.C.S., Professor of Clinical Surgery, University College, London. "Congenital Malformations, Aneurism, and other Surgical Topics."

1898. Thomas Clifford Allbutt, M.D., F.R.S., Regius Professor of Physic, University of Cambridge, England. "Diseases of the Heart."

1899. Nicholas Senn, M.D., Ph.LL.D., Professor of Surgery, Rush Medical College, Chicago. "Topics in General Surgery."

1900. Sir Michel Foster, K.C.V., D.C.L., Professor of Physiology, Cambridge, England. "History of Physiology."

1901. Sir Malcolm Morris, F.R.C.S., Edinburg, M.R.C.S., England; Surgeon, Skin Department St. Mary's Hospital, London. "Social Aspects of Dermatology."

1902. Sir Charles B. Ball, M.Ch., F.R.C.S., Regius Professor of Surgery, University of Dublin. "Diseases of the Rectum."

1903. Oscar H. Allis, M.D., Philadelphia, Pa. "Dislocations and Fractures Involving Larger Bones."

1904. William H. Welch, M.D., LL.D., Professor of Pathology, Johns Hopkins University, Baltimore. "Infection and Immunity."

1905. Sir Patrick Manson, K.C.M.G., F.R.S. "Tropical Diseases."

1906. John C. McVail, M.D., D.P.H., Cambridge, Glasgow. "Practical Hygiene, Epidemics and Preventive Medicine."

1910. Reginald Heber Fitz, M.D., LL.D., Hersey Professor of Theory and Practice of Medicine, Harvard University, Boston. "A Consideration of Some Features of the Lymphatic System."

1911. E. Fuchs, Professor of Ophthalmology, University of Vienna. "Importance of Ophthalmology in Its Relation to Systemic Disease."

1913. Edward Albert Schaefer, Professor of Physiology, University of Edinburgh. "Internal Secretion."

FOREIGN

Grants for Scientific Research.—The Austrian Academy of Sciences has given Prof. Wagner v. Jauregg $1,250 to finance further his research on the etiology of goiter; Professor Honigschmid of Prague was also given a grant of $613 to continue his studies of the atomic weight of the radium elements, and Professor Netolitzky of Czernowitz $375 to continue his study of the history of foodstuffs.

Prophylaxis of Plague in Italy.—The authorities at Naples have ordered that in view of the fact that various ports in the basin of the Mediterranean have lately become foci of bubonic plague, all ships must take strict precautions and use guards, etc., to prevent rats getting ashore from the ships. None can anchor less than 5 meters from the dock.

Comparison of Casualties at Football and Bull-Fights.—The *Medicina Contemporanea* of Lisbon, November 15, quotes a Spanish daily which compares the casualties during the last three months at football in the American university teams (fourteen dead and 175 injured) with the casualties at the bull-fights in Spain during the same period. "The bull-fights make a better showing, and it is still better," our exchange adds, "when we consider that football often entails a predisposition to lung and heart disease."

Deaths in the Profession Abroad.—The death is reported of Prof. Charles Périer of Paris, president of the Académie de Médecine, aged 78.——The cable reports the death of Alfred Fournier, one of the leading [illegible] world, aged 82, professor of dermatolo [illegible] at the University of Paris from 1863 until he reached the age limit. To the medical mind, "Fournier" spells "syphilis," as his works have been the text-books for more than one generation, and his methods were long the basis of treatment in all civilized countries.

WAR NOTES

Red Cross Seals in Germany.—Red Cross seals are being sold extensively in Germany. There is both a five- and a ten-pfennig seal.

Woman Physician Decorated for Bravery.—The *Deutsche medizinische Wochenschrift* states that the wife of the Vienna surgeon, A. Lorenz, accompanied him to the front as his assistant, and has recently been decorated by the emperor, receiving the gold Order of Merit with crown and the bravery medal.

Human Documents from the War.—The stories told by the wounded soldiers who have been cared for at the Charité hospital at Berlin form an interesting little volume of adventures and experiences — *Kriegsdokumente* — which is being sold by the G. Thieme firm at Leipzig for the benefit of the families of the wounded.

Minor Inconveniences of the War.—In Germany the wounded have frequently been carried past their homes or not carried far enough. The Rhinelanders have been taken far inland, and the Berliners left in the Rhineland, Bavarians taken to northern Germany and so on. The Red Cross has made a vigorous protest against this, and pleaded that the interests of the individual wounded should be regarded more than the train schedules, and the condition is being remedied.

Certain Quack Advertisements in Berlin Forbidden During the War.—The authorities have decreed that as long as the war lasts no newspaper or periodical published in Berlin or the province of Brandenburg is to be allowed to publish the advertisements of persons claiming to cure what are generally known as venereal diseases or their consequences or advertisements of articles or methods of treatment directed to the relief or cure of such. The decree does not apply to regularly registered physicians.

Medical Students at the Front.—Emergency examinations have been held in Germany to permit students who had nearly completed their medical course to take up active duty. The *Medizinische Klinik* states that about 2,250 medical students have thus blossomed out as physicians, and all but 750 have been distributed among the land and sea forces. The total number of physicians in the German empire has thus been summarily increased by about 7 per cent. The regular examinations will have to be taken later.

Medical Meetings at the Front.—The German army surgeons at various points at the front gather once or twice a week for general discussion, and the reports of these informal "army-medical evenings" are published regularly in our German exchanges. Especially in Belgium, the German and Belgian physicians gather frequently for these professional "smokers." In the home zone the meetings of different medical organizations are generally merged into one meeting, as there are so many gaps in the ranks.

Alcohol Among the Soldiers.—The prohibition of alcohol among the German troops has been partly lifted, as it was realized that the cold and damp bringing on intestinal trouble in many soldiers caused them to long for the transient warmth and subjective relief afforded by a drink of liquor. So it was decreed that if, under such circumstances, liquor was to be allowed the men it should be in the form of red wine. The temperance movement in the army, the authorities reaffirm, will otherwise be promoted in every way.

Committee to Aid Belgians.—An appeal made by Dr. Charles Jacobs of Brussels for aid for civilian physicians, pharmacists and patients in Belgium, has resulted in the organization of a committee of American physicians for the purpose of aiding those requiring help. The Commission for Relief in Belgium will deliver supplies, and in order to insure quick delivery it has been arranged that all shipments by the Committee of American Physicians will be made in boxes painted yellow. The color scheme adopted is designed to facilitate the safe passage of articles across the sea and through various countries. Subscriptions to the fund should be sent in the form of a check or postal order, made payable to Dr. Frank F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa.

Contributions to Fund for Belgian Physicians.—Dr. F. F. Simpson, treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, announces that for the week ending December 26, the following contributions have been received: Union Trust Co., banking facilities; Sterrett and Acheson, attorneys, professional services; F. O., $25; F. H. M., $100; F. F. S., $100; S. P., $25; G. C. S., $5; S. A., $20; E. W., $25; B. L., $10; T. E. S., $20; T. L. S., $25; R. S. E., $10; M. W. R., $10; W. A. P., $25; M. C. S., $5. Total, $405.

Deaths in German Army.—In the four weeks ending November 24, the *Münchener medizinische Wochenschrift* had given the names and titles of sixty-seven German physicians or medical students who had died or been killed at the front. Some died from infection contracted in tending the wounded. In the latest compilation, twelve of the forty-two names are listed as "stud. med." or "cand. med.," and most of them as *Kriegsfreiwilliger*, "volunteers." No lists of names are given in the French exchanges received, but some of our German exchanges publish within a laurel wreath the names of the members of the profession who have been wounded or are missing or have fallen or died otherwise at the front, as also all who have been awarded the iron cross for special gallantry under fire.

Quarters for the Wounded in Paris.—The *Presse Médicale* of November 19 gives the official list, with addresses, of the hospitals and other quarters in and around Paris arranged to receive wounded soldiers. Besides the four regular military hospitals and sixty-nine annexes, the Red Cross has 105 auxiliary hospitals, the Women's Union eighty-six, the Association des dames françaises 100, there are the twenty-five regular municipal hospitals and a long list of convalescent homes. The only independent hospitals, that is, under the direct control of the war department, are the English Hospitals with two annexes (one in the Hotel Astoria) and the American Hospital. The various auxiliary hospitals include of course many private residences, schools, colleges, casinos and stores, the Bon Marché, the Magasins du Louvre, the Masonic Temple, club houses and fashionable hotels.

Financial State Aid for Women at Confinement.—The German parliament is now discussing ways and means to provide state aid for women at childbirth. The plan is to supply medical care and obstetric nursing free of charge and also a pension during the eight weeks following, and a small daily sum thereafter as long as the woman nurses her babe, up to the end of the twelfth week after delivery. It is estimated that if this scheme goes through as proposed by the Bundesrat the expense will be about half a million dollars a month. "This expense is justified," the speakers said, "from the standpoint not only of the aid to the head of the house who has been called to the colors and has had to leave his wife unprovided for, but also from the standpoint that the losses in human lives sacrificed in the war make it the imperative duty of the state to care for the coming generation and promote its healthy growth in every way, even from its first entrance on the scene."

Medical Schools Abroad During the War.—Our exchanges mention resumption of the work of the medical schools to some extent, as many of the professors are too old for active service at the front and are keeping up their courses; but the academic halls are nearly deserted except where they have been converted into hospitals for the wounded. The Italian universities offer hospitality to students from other countries, the *Policlinico* saying that there can be no infringement of the obligations of neutrality in inviting students from other countries, including those from Russia, Servia and Japan, to whom the universities of Germany and Austria are now closed. The editorial deprecates "the prevailing custom of regarding laboratory achievements as the key that opens the door to academic positions. Minute study of some one small subject does not fit a man to be a successful instructor as much as broad culture and a synthetic vision of the whole field and its correlation with the other fields of knowledge." The medical schools in Switzerland have long been frequented by numbers of students from Russia and the Balkan states, and the proportion is still large.

Rye Must Be Mixed with Wheat Flour in Baking Bread in Germany.—According to our German exchanges just received, the decree of the Bundesrat regulating the consumption of flour went into effect December 1. It provides that no bread shall be baked henceforth from pure wheat flour. The bread must contain at least ten parts—by weight—of rye flour to ninety parts wheat flour. Rye bread offered for sale must be made with at least five parts potato flour to ninety-five parts rye flour. The baker can increase the proportion of potato flour if he wishes, but bread with more than five parts potato flour must be marked with the letter "K" (*Kartoffel*, "potato"). If there is more than twenty parts potato flour, the figure must be added to the "K." The feeding of rye and wheat grain or flour to domestic animals is strictly prohibited. Wheat flour is to be sold without admixture of rye. It is left to the baker to do the mixing. The decree specifies that the wheat flour must be bolted at least to 75 per cent. and rye flour 72 per cent. The term bread includes loaves, rolls, etc., but not cake or zwieback. The *Medizinische Klinik* comments on this regulation that "pure" wheat flour is seldom or never met with, as what is offered as such on the market almost invariably contains more or less of other grains. It continues: "The physician will not find that the new regulation interferes with his dietetic management of his patients as, if wheat bread is particularly needed for a patient, he can have it baked in the house or substitute cake or zwieback for loaf bread. The small admixture of rye in the bread or of potato flour in rye bread are of no consequence, it adds, from the medical point of view. What is important is to know that pure wheat flour can be bought as such, and that zwieback and similar light biscuits and cakes for the use of the sick are not affected by the decree which has only the commercial bakeries in view. The carbohydrate proportion, the starch and dextrinized substances in the bread, are not modified by the change, that is to say, there is no modification in the most important elements of the bread from the economic standpoint. There is scarcely any reduction in the elements representing the calorie value of the bread; the modification is almost exclusively in the proportions of the gelatinoid or albuminoid elements and in the proportion of the cellulose refuse. Of the three kinds of flour concerned, wheat flour contains the largest amount of protein and the smallest amount of cellulose, and potato flour the reverse. The bread will, therefore, be poorer in protein and contain more cellulose, but the change is so slight that it is negligible from the economic standpoint."

LONDON LETTER

London, Dec. 11, 1914.

The War

THE EXPLOSIVE EFFECT OF BULLETS

The ghastly effects sometimes produced by the modern rifle bullet, in contrast to the usual small aperture of entrance and exit and rapid healing, is still causing discussion as to the use of explosive bullets. Confusion arises from failure to distinguish between explosive effects produced by a legitimate bullet and the effects of an explosive bullet. That the pointed modern bullet, which differs little in the armies of all the combatants in the present war, may produce under certain conditions explosive effects has been abundantly shown. Mr. G. H. Makins, consulting surgeon to the expeditionary force, points out that these depend on two factors—high velocity and instability in flight—of which the latter is much more important. The effect of the former is principally shown by extensive comminution of bones when struck at a right angle. According to Mr. Makins, the instability of flight and tendency of the bullet to revolve around a transverse axis give it a capacity for wounding the soft part greater than that of any expanding or soft-nosed bullet. Unless impact with the body takes place by almost the exact tip, a rapid revolution of the bullet on its axis occurs and the bullet is driven sideways through the tissues, producing an extensive aperture of exit.

NEUROSES AND THE WAR

A certain number of cases of hysteria, traumatic and otherwise, are being observed in invalided soldiers. They appear to be due to a combination of factors such as fatigue, hunger, strain of responsibility and exposure to repeated explosions. In some cases autosuggestion appears to play a part. Thus a Belgian soldier was hit on the back by a heavy wooden sleeper blown against him by the explosion of a shell. He was knocked down half unconscious from shock and pain, and was brought to this country with paralysis of the left leg which on examination proved to be typically hysteric. In other cases, autosuggestion does not appear to play a part. Thus a British officer strained his right side in carrying a heavy wounded man. Three days later he noticed that he was dragging his right foot and that his right arm was weak. He was found to be suffering from hysteric hemiplegia.

THE OUTBREAK OF TYPHOID FEVER IN BELGIUM AND NORTHERN FRANCE

This outbreak was mentioned in a previous letter. It appears to be due to the drinking of unsterilized water by the Belgian troops. In the area flooded to bar the way of the Germans, the floods have emptied the cess-pits and middens and spread their contents far and wide. Moreover, many corpses are floating in the water. According to the principal medical officer of the Belgian troops, the reports of the outbreak have been exaggerated and there are only 120 cases among the soldiers. However, from twenty to thirty per day arriving at Calais have been reported. A traveler who has returned from a town in the southeast corner of Belgium states that it was being converted into an immense hospital to deal with convalescent typhoid cases, of which 1,600 had already arrived and preparations were being made for 4,000 more. So far there have been very few cases among the British troops—less than 200 in two and one-half months, and of these only five occurred among men who had been properly inoculated against the disease.

HOSPITALS AND THE WAR

By the erection of new hospitals as well as by the extensive accommodation offered in existing hospitals, ample accommodation is being provided for the wounded. To take only one example, the London Hospital has offered as many as 500 beds for the wounded soldiers and sailors, of which only about half have so far been required. This hospital has also under consideration the dispatch to France of a contingent of surgeons, physicians, nurses, dressers, roentgenographers and others sufficient to staff a hospital there. By such an arrangement most members of the hospital staff would be able to take a term of service with the contingent. Should the War Office desire, such a contingent will be immediately forthcoming. The base hospitals in France are well provided with consultants of all sorts. Eminent surgeons, physicians, ophthalmologists, and others have freely given their services. Among the latest are Sir Berkley Moynihan and his assistant, Mr. L. R. Braithwaite, who have gone as consultants in abdominal surgery.

THE EFFECTS OF THE WAR ON CIVILIAN PRACTICE

The war has effects on civilian practice, some of which are curious. There is a great falling off of office work, especially in consulting circles. The reason is that patients who read about the dreadful injuries of war think less of their own ailments. Hysteric and neurotic persons have now something to think about outside themselves. Even in the case of real ailments in which there is no urgency for treatment, such for example as hemorrhoids, patients trouble less about their symptoms and postpone operations. Another factor, no doubt, is the financial stress which leads to curtailment of expenditure. On the other hand, the profession has been financially benefited in some directions. The great demand for army surgeons has caused a falling off in the applications for junior institutional appointments, and increased salaries have to be offered. In one case the salary offered was doubled, and yet the advertisement still appears.

THE WAR AND CRIME

Another curious effect of the war is a great diminution of crime. The earlier closing of saloons, announced in a previous letter to The Journal, is one of the factors. At the present sessions of the Central Criminal Court there is no charge of murder or manslaughter. In an interview, a London magistrate has expressed himself as follows: "The criminal is a patriot. There is a genuine feeling of public spirit to be noticed to-day among those whom we call the criminal classes. Not only the graver forms of crime—those attended by violence, for example—but the most casual type of offense is less common than in the time of peace. The same moral improvement of the criminal was noticed—though not in so marked a degree—during the South African War. The criminal, like the honest citizen, is impressed by the war conditions, which make it every man's duty to give as little trouble as possible." The suffragettes have discontinued their agitation, and thus another source of crime is abolished.

THE EFFECTS OF THE WAR ON THE DRUG SUPPLY

This was the subject of discussion at the Pharmaceutical Society. Prof. H. G. Greenish dealt with the question of crude drugs, and expressed the opinion that the number of medicinal plants at present under cultivation in different parts of the British Empire might be very considerably increased. Was it not possible to find a substitute for a drug, the supply of which had been seriously curtailed as a result of the war? Necessity might compel us to search for parallel drugs, and, in the event of such not being forthcoming, to prosecute the cultivation of the drug we required in one of the divisions of the empire, and so render ourselves less dependent on sources of supply that might at such times as the present fail altogether. Mr. J. C. Umney said the action of the government in connection with a drug supply advisory committee in framing an effective schedule of contraband of war had done much to prevent clearance of existing stocks, and so protected the interests of our land and sea forces as well as those of the civil population. The action of the government, by their inquiries and legislative power of acquisition, had leveled prices from the range of fancy to fact in the short space of two or three weeks. Mr. C. A. Hill, referring to the manufacture of synthetic drugs, said we could not expect to build up in a few months an industry which had taken forty years to develop in Germany. One of the great difficulties was that each product depended on others, the raw materials of one synthetic substance being a by-product in the manufacture of another. It would not pay to put down an expensive plant for the manufacture of a few products, the whole consumption of which was only a matter of perhaps hundredweights, but it would pay a factory which could turn out a hundred products each with a consumption of some hundredweights per annum. Mr. F. W. Gamble reviewed the position with regard to serums and vaccines. Since the outbreak of war, large quantities of typhoid vaccines had been supplied to the War Office, and there had been a heavy demand for calf-lymph, antisepsis vaccine and tetanus antitoxin.

Alive After a Fall of 115 Feet

The case of a man who survived a fall of 115 feet furnishes a record. An inquest was held on a builder's signalman who died as the result of the collapse of a derrick staging in a gale. His companion who had fallen 115 feet on to hard concrete survived, and the inquest was adjourned for his attendance.

PARIS LETTER

Paris, Nov. 19, 1914.

The War

WAR AND INSANITY

It is well known that during the war in Manchuria the number of cases of insanity, especially in the Russian army, were very great. Therefore, at the beginning of the present war, measures were taken to provide against the danger of an outbreak of insanity, and it was agreed that, in view of the probable number of cases, a special asylum should be reserved for all the unfortunates demented by war. Experience has shown that these apprehensions were exaggerated. Cases of insanity caused by the war among civilians or soldiers are very rare at present. They can be divided into four classes: There were, at the outset, some cases of insanity clearly due to alcoholism; also some cases of latent general paralysis which developed under the strain of sudden emotion, and likewise cases of melancholia. What has been feared especially, however, in view of the experience of the war in Manchuria, has been the fourth class of cases —those induced by the inevitable fatigue of the campaign. These fears have not been justified for such cases have been very rare, chiefly because the nutrition and hygiene of the troops are incomparably better than were those of the armies in Manchuria.

THE USE OF TETANUS ANTITOXIN

By order of the minister of war, a commission consisting of Dr. Roux, director of the Institut Pasteur, Dr. Vaillard, medical inspector-general, and Dr. Chavasse, director-general of the sanitary service of the group of armies, has been organized to study the best method of utilizing the available supply of tetanus antitoxin. Since the injection should be made as soon as possible after the wound the commission proposes the following measures:

1. All the ambulances and hospitals near the front and also the sanitary trains shall be supplied in the first place.
2. Delays and losses are to be avoided by sending consignments of serum expressed to their destination.
3. Since wounds of the soft parts rarely cause tetanus, injections of serum are to be made by preference in cases in which wounds affect the bones or are manifestly soiled or contain foreign bodies.
4. Preventive injections are to be given in the ambulance or in the hospital near the front. When, on account of the great number of the wounded, the physicians near the front have not the time to do this, the injections should be made in the more distant hospitals or in the sanitary trains which should always be provided with supplies necessary for dealing with these cases.
5. The application of these measures is to be facilitated by tagging the patient with an individual record slip attached to his clothes in which the physician who made the first dressing shall mention whether or not he has made the preventive injection. This tag is to be carefully preserved.
6. When the physician believes that an infected wound may still be liable to tetanus, he should make a second injection several days after the first and sometimes a third after the second. To avoid the danger of anaphylaxis, it is best to have no longer interval between the injections.
7. In the cases of outspoken tetanus, intravenous, intraspinal or intracerebral injections should be used. The commission recommends that the physician make sure that the patient has never received a therapeutic serum injection (antidiphtheritic, antidysenteric, etc.). If he has, in order to avoid anaphylaxis, Besredka's method of subintrant injections should be followed, that is, the serum should be diluted to one-tenth strength and 1 c.c. injected into a vein; four minutes afterward, 3 c.c.; two minutes afterward, 5 c.c.; fifteen minutes afterward, pure serum either into the vein or into the spinal canal.
8. The commission emphasizes that strict and immediate antisepsis of wounds is one of the best means of avoiding tetanus.

THE PROPHYLAXIS OF TYPHUS IN THE ARMY IN THE FIELD

Dr. Charles Nicolle and his collaborators of the Institut Pasteur de Tunis have shown by experiments confirmed by American physicians in Mexico (The Journal, March 23, 1912, p. 873, and April 20, 1912, p. 1198) that lice are the agents of the propagation of exanthematic typhus. The prophylaxis of typhus based on this important discovery has given very remarkable results. Typhus, which was endemic in Tunis and which has claimed a large number of victims among the native population each year, has almost completely disappeared. The number of cases, which was 836 in 1909, fell to 22 in 1912. The only measure taken was a systematic destruction of lice about the patients and in their environment.

November 9, Professor A. Laveran, before the Académie des sciences, called attention to the special interest of these facts to-day. Exanthematic typhus is par excellence a disease of armies in the field. It was formerly called "camp-fever," "malignant fever of armies" and "war plague." The list of deadly epidemics of typhus which have raged among armies in the field, is a long one. Thus, during the Crimean War (1855-1856) typhus made great ravages among the French and English armies. The soldiers, for protection against the cold and the projectiles of the enemy, dug themselves covered pits where contagious diseases spread with great facility. To-day, because of the progress in artillery, the use of trenches has become general. During the great battles of the Marne and the Aisne, trenches, covered or not, took on such importance that these battles are justly compared to sieges. Now, that the winter is coming on, the tendency of the soldiers to shut themselves up in molehills, as it were, is possibly increasing and if the germ of typhus were to be imported into the army, it might give rise to a disastrous epidemic. Is this importation possible? Laveran replies that it is, for exanthematic typhus has long been endemic in certain German provinces, especially Silesia. The treatment of phthiriasis in the soldier is always a necessary measure of cleanliness and hygiene. Under present conditions, it is the most efficacious measure that can be taken against exanthematic typhus.

SURGICAL INTERVENTION IN LESIONS OF THE NERVE TRUNKS OF THE LIMBS BY MILITARY PROJECTILES

November 10, Dr. Walther, *agrégé* professor at the Faculté de médecine de Paris and surgeon to the hospitals, read an interesting paper on this subject before the Académie de médecine. At the military hospital of Val-de-Grâce, Walther observed, in 502 wounded patients, twenty-seven cases of lesions of the nerve trunks, eighteen in the arm and nine in the leg. He operated in six cases. Generally, the anatomic lesions demonstrated during operation consisted of a very sharp compression of the nervous trunk by a thick solid mass of very hard cicatricial tissue much larger than would be supposed from the dimensions of the cutaneous scar. Indication for operation is often established by the intensity of pains. The operation can be performed very early, even before the complete cicatrization of the cutaneous wound if a large resection of this wound and the subjacent cicatricial tissue is made. When there is complete paralysis without pain, it is better to wait for the cicatrization of the wound, but if then no tendency to improvement under medical treatment is observed, it is better to operate early in order to avoid the aggravation of the lesions by compression from the retraction of the deep cicatrix. The operation is usually laborious. Walther recommends bathing the nerve constantly during the operation with warm isotonic, physiologic saline solution. An important feature of the operation consists in building up, above and below the nerve, two planes of normal tissues so as to avoid all probability of retraction of cicatricial tissue. This may almost always be done by adjusting a slip of neighboring muscle tissue, maintaining it in place by suture on the edge which does not pull on the nerve. The defect in the skin resulting from removal of the cicatrix may be very large and should be repaired by autoplasty so that the whole region is covered anew with supple and mobile tissue.

The results of these operations have been very satisfactory; the pains have disappeared immediately, though they generally reappear momentarily during the following days much attenuated. and of different characters; they cease completely after ten or fifteen days. In a case of paresis from compression of the median nerve, complete reestablishment of mobility was obtained at the end of twenty days. There has been no functional improvement as yet in the three cases of total motor paralysis.

Paris, Dec. 3, 1914.

HOSPITALS FOR SOLDIERS OF THE BELGIAN ARMY AND FOR COLONIAL SOLDIERS

A hospital of 200 beds for wounded Belgian soldiers, forming a complete separate service having its own entry, is to be installed at Paris at the Hôtel-Dieu. The great halls of the ground floor will hold the dressing-rooms and the storerooms, also a workshop for the preparation of warm clothes for the convalescents leaving the hospital. The wards for patients, officers' rooms, and the isolation-rooms will be on the two floors above. The medical and nursing staffs will be entirely distinct from those of all other institutions. At the entry will be placed a tablet bearing the inscription "Military Hospital Albert I Created by the City of Paris for the Wounded Soldiers of the Belgian Army." The court of honor will bear the name of "Court of Queen Elizabeth." The rooms of the hospital will be called by the names of Belgian cities: Brussels, Liége, Antwerp, Louvain, Malines, Namur, Dinant, Bruges, Ghent, Ostend, Nieuport, Dixmude, Ypres and Furnes.

Our wounded colonial soldiers are at present widely scattered. Placed among Europeans whose language they do not know, deprived of news of their families, with whom, since they do not know how to read or write, they cannot correspond, these soldiers are rapidly affected with melancholia, and physicians state that this mental attitude has a bad effect on their convalescence. It was thought that by placing these men together and facilitating the receipt of collective news from their homes, these disadvantages would be obviated to some extent. The installation of a special hospital for wounded colonial soldiers has therefore been proposed.

PRESERVED MEATS FOR THE ARMIES

November 23, Dr. Roux, director of the Institut Pasteur, read a paper before the Académie des sciences on means of preparing preserved meat for the armies, especially for the entrenched camp of Paris. The operation consists in placing in metal cans, 800 gm. of raw meat cut into pieces, 50 gm. of rice, 10 gm. of salt and 2 gm. of agar-agar. The cooking is done in an autoclave in three hours and the cans are then sealed. Dr. Roux admits that the method officially sanctioned by the war department is preferable, but it is also less expeditious, and speed is an important element under the present circumstances.

ANTITYPHOID VACCINATION IN THE NAVY

The minister of marine has just addressed to naval officers a circular letter making antityphoid vaccination obligatory in the navy, as it already was in the army. Vaccination is not to be performed on men protected by a previous attack of typhoid, those who present contra-indications, those who are to be on active duty immediately, or those who cannot be kept in one place for a sufficient length of time to permit the application of the entire course of treatment.

AID FOR THE STUDENTS OF LILLE

The vice-rector of the Académie de Paris has informed the dean of the Faculté de médecine de Paris that he may, at the request of students of the Faculté de médecine of the Université de Lille, authorize them to follow provisionally without payment of fees, the work corresponding to their year of studies and to use the library up to the time until they are able to resume their studies in Lille.

PROHIBITION OF ABSINTHE IN THE COLONIES

A decree has just forbidden the introduction, manufacture, sale or possession, for personal use or for sale, of absinthe and the similar liquors throughout the colonies and territories of western French Africa.

THE SALE OF THE RED CROSS STAMP

I mentioned in a previous letter (The Journal, Oct. 31, 1914, p. 1591) the creation of a special 15 centime (3 cents) postage stamp one-third of the price of which goes to the Red Cross. The sale of this stamp had realized, up to October 1, 120,000 francs (about $24,000). Still larger sales are hoped for.

TWO NEW HOSPITAL SHIPS

The Société générale des transports maritimes has decided to transform two of its boats, the *Aquitaine* and the *Boukkala*, into hospital ships. The society defrays all the expenses. One hundred and thirty beds are placed on the spar deck, which is arranged as a dormitory. The poop has been made into a refectory. The medical and nursing staff is lodged in the cabin. The two boats are now ready to receive wounded.

THE ACADEMY OF MEDICINE ON THE SUBJECT OF THE PROHIBITION OF ALCOHOL

November 24, the Académie de médecine unanimously voted its approval of the action of the czar of Russia in forbidding the manufacture and sale of alcoholic drinks.

PERSONAL

Among the numerous members of the medical profession who have received the decoration of the Legion of Honor for their practice in the war are Dr. Proust, agrégé of the Faculté de médecine de Paris and surgeon of the hospitals and Dr. Victor Pauchet, professor at the Ecole de médecine d' Amiens. The former was mentioned in an order of the day for having displayed remarkable devotion and energy in the organization of sanitary service August 22-26, and for operating on the wounded under the fire of the enemy. Dr. Pauchet was decorated with the following official mention: "A surgeon of great scientific renown who, by his inexhaustible activity and devotion above all praise has under the most difficult circumstances saved the life of a great number of dangerously wounded."

Death of Dr. Léon Vaillant

Léon Vaillant, doctor of medicine and of sciences, has just died in Paris, aged 80. He was formerly professor at the Faculté des sciences de Montpellier and honorary professor of the Museum of Natural History at Paris, and member of various scientific societies.

Marriages

Rembert James Coney, M.D., Eutawville, S. C., to Miss Daisy Katherine Minahan of Charleston, S. C., at Orangeburg, S. C., December 15.

Karl Osterhaus, M.D., Washington, D. C., to Miss Elizabeth Oxley Currie of Winslow, N. S., at New York City, December 2.

Robert Hamilton Bishop, Jr., M.D., Saranac Lake, N. Y., to Miss Constance Mather of Cleveland, Ohio, December 5.

Alfred Magnus Kendahl, M.D., Jasper, Minn., to Miss Lillian Rosina Natzke of Pipestone, Minn., December 12.

Arthur Flournoy Jackson, M.D., to Miss Margaret Christy Tupper, both of Honolulu, H. I., November 20.

Junius Hardin McHenry, M.D., New York, N. Y., to Miss Amy DuPuy of Pittsburgh, Pa., December 5.

Charles Harland Downing, M.D., to Miss Lillian E. Marryatt, both of Everett, Mass., December 10.

Roscoe Earl Hamlin, M.D., Santa Rosa, Cal., to Miss A. Carmen Mouritz of Oakland, Cal., December 9.

Harvard Hersey Crabtree, M.D., Bangor, Maine, to Miss Constance M. Newell of Boston, December 2.

William Henry Haines, M.D., Pittsburgh, to Miss Mabel Estelle Bemis of Warren, Pa., December 9.

Arthur Columbia Pearman, M.D., to Miss Katherine Keeler, both of Rockford, Ill., December 12.

John Lyman Beard, M.D., Hillsboro, Cal., to Miss Clarice Pierson of Martinez, Cal., December 25.

Charles Robert Austrian, M.D., to Miss Florence Hochschild, both of Baltimore, December 9.

Le Roi Goddard Crandon, M.D., Boston, to Mrs. Lucy E. Gill, in New York City, December 15.

Walter Edgar Barbour, M.D., Seville, Ga., to Miss Leake Clark of Atlanta, Ga., December 15.

Cuvier L. Clover, M.D., to Miss Freda Trainer Moore, both of Knox, Pa., December 21.

Solomon A. Weiss, M.D., to Miss Gertrude Marblestone, both of Chicago, December 6.

J. H. McKinney, M.D., Fulton, Ark., to Miss Cora Holthoff of Dumas, Ark., recently.

Deaths

Albert Freeman Africanus King, M.D. George Washington University, Washington. D. C., 1861; University of Pennsylvania, Philadelphia, 1865; a Fellow of the American Medical Association; professor of obstetrics and diseases of women and children in his Alma Mater, from 1871 to 1913, and dean of the institution from 1879 to 1894; professor of obstetrics in the University of Vermont, Burlington, from 1871 to 1913; president of the Washington Obstetrical and Gynecological Society, from 1885 to 1887, and of the Medical Society of the District of Columbia in 1883-84; acting assistant surgeon, U. S. Army in 1864; author of a manual of obstetrics; died at his home in Washington, December 13, from senile debility, aged 73. In tribute to Dr. King's memory the George Washington Medical School was closed on the day of his funeral.

Benjamin W. Smock, M.D. Hospital College of Medicine, Louisville, 1889; a Fellow of the American Medical Association; for twenty years health officer of Jefferson County, Ky.; sanitary inspector of the State Board of Health and a commissioner of the Lakeland State Hospital; aged 54, who had been in ill health for a long time; died at his home in Louisville, December 16, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent, while of unsound mind.

James Delaforet Whitley, M.D. Rush Medical College, 1874; a member of the Illinois State Medical Society and a Fellow of the Royal Microscopical Society of London; a veteran of the Civil War in which he served in the Hospital Corps; local surgeon of the Chicago and Alton Railroad; medical health officer of Petersburg, Ill., for sixteen years; died at his home in that city, December 12, aged 70.

Louis Kolipinski, M.D. Georgetown University, Washington, D. C., 1883; a Fellow of the American Medical Association and a well-known practitioner and pharmacist of Washington; resident physician to the Children's Hospital and professor of surgery in the National University Medical College; died in a street car in Washington, December 15, from cerebral hemorrhage, aged 55.

Frank McWilliams, M.D. University of Pennsylvania, Philadelphia, 1899; a member of the Medical Association of the State of Pennsylvania and of the National Association for the Study and Prevention of Tuberculosis; for many years a member of the staff of St. Joseph's Hospital, Reading, Pa.; died at his home in Schuylkill Haven, Pa., December 16, from pneumonia, aged 40.

Winfield Scott Smith, M.D. Boston University School of Medicine, 1883; professor of operative surgery in his Alma Mater; and surgeon to the Massachusetts Homeopathic and Symmes hospitals, Boston, Arlington City Hospital, Quincy Hospital and Leonard Morse Hospital, Natick, Mass.; died at his home in Brookline, Mass., December 16, aged 53.

William H. Carter, M.D. Barnes Medical College, St. Louis, 1896; of Poolville, Tex.; formerly secretary of the Medical Board of Examiners for the forty-eighth Texas district; physician of Tarrant County, Tex., and a member of the staff of the Tarrant County Hospital; was shot and killed in Poolville, December 15.

Charles William Trueheart, M.D. Medical College of Virginia, Richmond, 1864; who was made an honorary member of the Bexar County (Texas) Medical Society in 1914; a Confederate veteran; for many years city health officer of Galveston, Texas; died at his home in San Antonio, Texas, December 14, aged 77.

Frederick Lewis Foster, M.D. Hahnemann Medical College, Chicago, 1900; a Fellow of the American Medical Association; city physician of Fond du Lac in 1903; a specialist on diseases of the eye, ear, nose and throat; died at his home in Fond du Lac, December 10, from pneumonia, aged 41.

Alexander J. Mitchell (license, Kentucky, 1881). For forty-three years a practitioner of Wirt County, W. Va.; and for several terms a member of the legislature; a member of the state mine commission; died at his home in Burning Springs, W. Va., December 9, from heart disease, aged 69.

Robert S. Talbot, M.D. Medical College of Virginia, Richmond, 1902; formerly of Lynchburg and Richmond, Va.; a member of the staff of the Central State Hospital, Petersburg, from 1903 to 1906; died at the Retreat for the Sick in Richmond, December 10, aged 37.

James S. McCorkle, M.D. University of Nashville, Tenn., 1860; a surgeon in the Confederate army during the Civil War and for more than thirty years a practitioner of Arkansas; died at his home in Fort Smith, December 11, from disease of the bladder, aged 79.

Ella Averill Patterson, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1901; who did heroic service at her home city, Butler, Pa., during the recent epidemic of typhoid fever; died at the home of her mother in Philadelphia, December 17, aged 36.

William H. Turkopp, M.D. Starling Medical College, Columbus, Ohio, 1879; for twenty-five years a practitioner of Yankton, S. Dak., but for the last ten years a resident of Columbus, Ohio; died at his home in that city, December 9, from nephritis, aged 59.

Frank Leslie Stallings, M.D. Kentucky School of Medicine, Louisville, 1901; a Fellow of the American Medical Association; died at his home in Lindsey, Cal., December 12, from septicemia, two days after an operation for abscess of the arm, aged 53.

Addison H. Bowser, M.D. Western Reserve University, Cleveland, 1885; a member of the Medical Society of the State of Pennsylvania and formerly a practitioner of Reynoldsville; died in the Warren (Pa.) State Hospital, December 8, aged 52.

John Wiebly Bealor, M.D. Washington University School of Medicine, Baltimore, 1876; a member of the Medical Society of the State of Pennsylvania; died at his home in Shamokin, December 11, from cerebral hemorrhage, aged 60.

William Higginbotham, M.D. Queen's University, Kingston, Ont., 1871; for many years a practitioner of Omemee, Brantford and Walker, Ont.; died at the home of his daughter in Brantford, December 15, aged 66.

John A. Dix, M.D. Eclectic Medical Institute, Cincinnati, 1871; a pioneer practitioner of Whitman County, Wash., and a veteran of the Civil War; died at his home in Garfield, Wash., December 9.

permitted; but to an intelligent and earnest judge it soon became apparent that the services of a man skilled in the examination of juvenile offenders was of great assistance to him in the adjudication of the cases. Finally, this assistance has become so valuable as to be indispensable. Judge Pinckney, the exceptionally able incumbent of the bench at the Juvenile Court, has averred that he could not go on with his present work without the help of Dr. Healy, who has been the institute's director since the beginning, or some equally efficient aid. So evident has the value of this work become to judiciary, police, attorneys, probation officers, criminologists and sociologists, that emissaries from many cities in this country and Europe have come to observe and have gone home to institute similar bureaus. Seattle was the first to follow us, Boston next, Munich soon after, and now the Municipal Court of Chicago has its own expert.

For five years Mrs. W. F. Dummer and her sisters supported the institute as a private benefaction with public functions, but now Cook County has awakened to its duty and opportunity, and has taken over the institute as an official adjunct of the Juvenile Court. Medical men everywhere should know of and appreciate the importance of this innovation, because,

Fourth, when the opportunity arises for them to assist in the installation of similar officers in their own cities and towns, it is to be hoped that they will earnestly further this step forward in scientific research, common humanity and the administration of justice.

Hugh T. Patrick, M.D., Chicago.

[An advertisement for a director for the institute appears this week under Announcements, advertising page 20.—Ed.]

Postgraduate Study: Facilities in New York

To the Editor:—I did not realize how far Boston is from New York until I read in The Journal, Dec. 12, 1914, p. 2150, the communication on postgraduate study by Dr. Hugh Payne Greeley of that intellectual center, which is concluded thus: "Let us at once set to work and organize ourselves for this task and give to American physicians practical postgraduate work in *our own* language, and with our own *trade-mark*."

For nearly thirty-three years, there have been actively and successfully engaged in "practical postgraduate work" and in "our own language" and with a distinctly American "trademark," two organizations of well-known medical teachers who have had in attendance on their demonstrations and at their lectures some 50,000 practicing physicians from our own continent and from all over the world.

The New York Polyclinic Medical School and Hospital and the New York Post-Graduate Medical School and Hospital have expended in buildings and equipment approximately $3,000,000, and nowhere in the world can be found better opportunities for a practical postgraduate training and "brushing up" than are afforded by these schools. Over 300 physicians and surgeons are devoting their time to this work, without one dollar of remuneration, and many of these have, in addition, given largely of their means to make postgraduate teaching in America the great success it has proved to be.

May I cite our Bay State brother to an extract from the Boston *Transcript* of Nov. 17, 1914, a paper which may be profitably read by every good American?

> "Nor can there be any question that the establishment of the Polyclinic (1881) was the chief stimulus to the advance of medical thought and science in the United States; a stimulus that was felt, not only throughout this country, in all of whose important cities one or more postgraduate medical schools have been founded, but across the sea as well, where the system has been adopted in London and other cities!"

No matter how "tremendous" may be "the impetus to postgraduate instruction on account of the European War," the two great schools of the metropolis are ready for the hoped-for influx and will meet every requirement.

John A. Wyeth, M.D., New York.

Provision for Infants in Chicago Municipal Tuberculosis Sanitarium

To the Editor:—In connection with the article of Dr. Alfred F. Hess of New York on "The Neglect to Provide for the Infant in the Antituberculosis Program" (The Journal, Dec. 19, 1914, p. 2176), I wish to state that the Chicago Municipal Tuberculosis Sanitarium, which is to open its doors about March 1, contains a provision for the new-born infants of tuberculous mothers. A description of this provision was given by Dr. Charles S. Bacon of this city, in his article published in The Journal, Sept. 6, 1913, p. 750.

The Chicago Municipal Tuberculosis Sanitarium which, with its ultimate capacity of 950 beds, is the largest municipal sanitarium in the country, has a comprehensive provision for children (240 beds for ambulant cases and a special provision for bed cases in the infirmary).

In addition to this the sanitarium has a nursery to which two classes of new-born infants will be admitted: (1) the new-born infants of tuberculous mothers confined in the maternity department of the sanitarium, and (2) the newborn infants of tuberculous mothers remaining at home, who are unable to arrange for safe and proper care of the infant at home.

This is the first arrangement of its kind in the country, and it will no doubt prove of great value in meeting one of the great needs of the tuberculosis situation in a large community. The initial provision in the Chicago Municipal Tuberculosis Sanitarium is for twenty infants, but this will be gradually extended to meet the needs of the situation.

I was very glad to learn from the article of Dr. Hess that this important phase of the tuberculosis situation is in a way to receive due recognition in New York.

Theodore B. Sachs, M.D., President.
Chicago Municipal Tuberculosis Sanitarium.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DENATURED ALCOHOL

To the Editor:—1. By what process is alcohol denatured? 2. Can it safely be used for bathing purposes?

J. G. Pettit, M.D., Weston, W. Va.

Answer.—1. Alcohol ordinarily is denatured according to the following formula: "To 100 parts by volume of 90 per cent. alcohol add 10 parts of approved wood alcohol and one-half of 1 part of approved benzin." In other cases the use of 2 parts of approved alcohol and one-half part of approved pyridin is permitted. Information on this question can be obtained by addressing the Treasury Department, Bureau of Internal Revenue, Washington, D. C.

2. The external use of any alcohol containing wood spirits is unsafe.

REMOVAL OF RUST FROM INSTRUMENTS

To the Editor:—Can you give me a formula for removing rust from instruments?

James M. Adams, M.D., Amite, La.

Answer.—Instruments can be prevented from rusting in the process of sterilization by adding some sodium bicarbonate to the water in which they are boiled. A good polishing powder may be of aid in removing rust already formed.

LITERATURE ON FUNCTIONAL TESTS OF THE LIVER AND PANCREAS

To the Editor:—I should like to be informed as to the nature and methods of some of the newer tests of the functioning power of the liver and pancreas. These new tests do not seem to be mentioned in any of the newer works on diagnostic tests which I know of. Any information concerning them, or any literature which describes them, will be exceedingly opportune.

R. J. Midgley, M.D., Salt Lake City.

Zeitschrift für Kinderheilkunde, Berlin

December, XIII, Nos. 5-6, pp. [illegible]

87 *Splenomegaly in Children. E. Nobel and R. Steinebach.
88 [illegible] (Multiple Hemangiome nach Masern.) [illegible]
89 *Experimental Study of Alimentary Fever. E. Lövegren.
90 Rapid Growth in Length of Fingers and Toes; Two Cases. (Ueber 2 Fälle von Arachnodaktylie.) F. Börger.
91 [illegible] Analysis of Six Feeble-Minded Children. (Analysen einiger Schwachsinniger.) [illegible]

87. Splenomegaly in Children.—Nobel and Steinebach describe a case of successful splenectomy for cirrhosis of the liver in a child of 8. The icterus disappeared eight days after the operation and the enlarged liver decreased markedly in size. The case could not be followed any further. Eppinger has recently collected the cases in which splenectomy has been performed for hypertrophic cirrhosis of the liver, and the results show that the operation is justified. A histologic picture of the spleen in some cases is given, showing a marked increase in connective tissue. The changes are similar to those in Banti's disease, and the similar results of splenectomy also indicate a relationship. But there are many points of difference in their symptomatology and course, although it seems certain that the spleen plays a part in the pathogenesis of both.

They further describe two cases in which splenectomy was performed for acquired hemolytic icterus. The icterus and anemia disappeared soon after the operation and did not return and the reds became normally resistant. Banti performed splenectomy in hemolytic icterus and obtained recovery; since then it has been performed with success by numerous surgeons. It is most successful in the familial form, but Mitchell has reported good results in acquired hemolytic icterus. The brilliant results of splenectomy have caused many to believe that the spleen plays the chief part in the pathogenesis of hemolytic icterus. But the early improvement does not always persist, so that there must be a primary change in the red cells or defective functioning of the bone marrow. Eppinger holds that a supernumerary spleen or hemolymph glands may enlarge and assume the pathologic function of the spleen. Sometimes adhesions are formed after the operation that result in serious consequences for the patient. In the second case described they finally caused death. This must be taken into consideration in deciding the indications for the operation.

89. Alimentary Fever.—Lövegren has performed a series of experiments on dogs in an attempt to settle some of the disputed points in regard to alimentary fever, foremost among which is the question of whether the fever is really caused by the food or by bacterial invasion. He injected solutions of various kinds, salt, sugar and Ringer's solution, directly into a mesenteric vein, so that they reached the portal circulation directly, during the process of digestion. He gives the reports of the individual experiments and forty-one fever curves in the text. There is also a bibliography of [illegible] titles.

He found that fever really is caused by certain constituents of the food, chief among them salt and sugar. The effect is greater when the solutions are introduced directly into the portal circulation than when the injections are made into the peripheral veins. There is probably a biochemic-physical effect on the liver cells, the nature of which, however, is not definitely known. The fever is less with an isotonic solution than with either the hypertonic or hypotonic, and it is higher with milk sugar than with grape sugar. The leukocyte counts in his animal experiments were similar to those found by Rosenstern in clinical cases.

Zentralblatt für Chirurgie, Leipzig

February 13, XLII, No. 7, pp. [illegible]

92 Technic for Appendectomy. E. [illegible]

Zentralblatt für Gynäkologie, Leipzig

February 13, XXXIX, No. 7, pp. [illegible]

93 Subcutaneous Rupture of the Clitoris from a Fall, with Large Hematoma. E. [illegible]

Gazzetta degli Ospedali, Milan

February 14, [illegible]

94 *Intravenous Injections of Iodoform in Treatment of Pneumonia. A. Cardilli.

February 17, No. 20, pp. [illegible]

95 Stab Wound of Both Heart and Lung. (Ferita del cuore e del polmone.) S. Caruso.

February 21, No. 23, pp. [illegible]

96 *Echinococcus Disease of the Lungs and Pleura. G. Cerulli.

94. Iodoform in Pneumonia.—Cardilli reports eight cases of secondary pneumonia and five of primary in all of which he gave intravenous injections of a suspension of 1 gm. of iodoform in 20 gm. of a concentrated solution of glucose. There was unmistakable benefit in the secondary cases but not in the primary ones; the injections in this case generally came too late. The usual dose was 15 c.c. of the suspension daily or on alternate days in the seven cases in which the pneumonia was secondary to typhoid, and all these patients promptly recovered. From seven to eleven injections were made in the various cases. The patients bore the injections well; there was no cyanosis or pallor, but merely slight and transient increase of the dyspnea and rise in temperature after the first injection. In some other cases the postoperative pneumonia showed great benefit from the injections; one instance is related in detail. In a number of the above cases Cardilli had considered the patients beyond hope, but the injections tided them past the danger point. The experience with the cases of primary pneumonia was not encouraging. There is no need for the injections in mild cases, and in the severe the drug has no chance for effectual action. He always gave thymol by the mouth and digitalis as need, supplementary to the injections of iodoform.

96. Echinococcus Disease of Lungs and Pleura.—In Cerulli's two cases the cough and pain in breathing simulated a tuberculous process in the lung, but there was no blood in the sputum and percussion showed an area of dulness with convex or concave upper margin, and when the patient was sitting up the dulness extended higher in front than at the back, thus excluding an ordinary pleural effusion. The parasites were all dead in the focus on account of the suppuration, and probably for this reason there was no eosinophilia. In his experiences otherwise he found it marked in about two-thirds of the cases. His successful operative treatment confirms the value of prompt operative measures on even the suspicion of echinococcus disease in the lungs and pleura. Under expectant treatment there is danger of suppuration, absorption of toxins from spontaneous [illegible] perforation and vomica, and an emergency operation may come too late.

Riforma Medica, Naples

February 6, XXXI, No. 6, pp. [illegible]

97 *Non-Tuberculous Lesions of the Apex of the Lungs. [illegible] Commenced in No. 5.
98 *Primary Sarcoma of the Stomach; Two Cases. G. di Gio.
99 Epileptic Convulsions and [illegible] E. [illegible] Commenced in No. 5.

February 13, No. 7, pp. [illegible]

100 Experimental Research on Influence of Manganese on Nitrogen Metabolism. A. [illegible]

February 20, No. 8, pp. [illegible]

101 Acromegaly Due to Excessive and Genito-Dystrophic [illegible] to Deficient Functioning of Sexual Glands. ([illegible]) [illegible]
102 *Early Visceral Lesions from Inherited Syphilis. Commenced in No. 7.

97. Non-Tuberculous Lesions of the Apex.—[illegible] refers to apical lesions caused by inhalation of [illegible] injury, and remarks that although they are not as tuberculous lesions yet they are of frequent [illegible] and involve tuberculosis. The negative findings [illegible] tubercle bacilli and the tuberculin tests are [illegible] when they all harmonize over long periods [illegible] the clinical findings. The main point is to [illegible] possibility that signs of an apical affection [illegible] inevitably that it is of tuberculous nature [illegible] of the non-tuberculous affection on account [illegible] with the relief from dread of tuberculosis [illegible]

Children
Georgia
Illinois
[illegible]

permitted; but to an intelligent and earnest judge it soon became apparent that the services of a man skilled in the examination of juvenile offenders was of great assistance to him in the adjudication of the cases. Finally, this assistance has become so valuable as to be indispensable. Judge Pinckney, the exceptionally able incumbent of the bench at the Juvenile Court, has averred that he could not go on with his present work without the help of Dr. Healy, who has been the institute's director since the beginning, or some equally efficient aid. So evident has the value of this work become to judiciary, police, attorneys, probation officers, criminologists and sociologists, that emissaries from many cities in this country and Europe have come to observe and have gone home to institute similar bureaus. Seattle was the first to follow us, Boston next, Munich soon after, and now the Municipal Court of Chicago has its own expert.

For five years Mrs. W. F. Dummer and her sisters supported the institute as a private benefaction with public functions, but now Cook County has awakened to its duty and opportunity, and has taken over the institute as an official adjunct of the Juvenile Court. Medical men everywhere should know of and appreciate the importance of this innovation, because,

Fourth, when the opportunity arises for them to assist in the installation of similar officers in their own cities and towns, it is to be hoped that they will earnestly further this step forward in scientific research, common humanity and the administration of justice.

Hugh T. Patrick, M.D., Chicago.

[An advertisement for a director for the institute appears this week under Announcements, advertising page 20.—Ed.]

Postgraduate Study: Facilities in New York

To the Editor:—I did not realize how far Boston is from New York until I read in The Journal, Dec. 12, 1914, p. 2150, the communication on postgraduate study by Dr. Hugh Payne Greeley of that intellectual center, which is concluded thus: "Let us at once set to work and organize ourselves for this task and give to American physicians practical postgraduate work in *our own* language, and with our own *trade-mark*."

For nearly thirty-three years, there have been actively and successfully engaged in "practical postgraduate work" and in "our own language" and with a distinctly American "trademark," two organizations of well-known medical teachers who have had in attendance on their demonstrations and at their lectures some 50,000 practicing physicians from our own continent and from all over the world.

The New York Polyclinic Medical School and Hospital and the New York Post-Graduate Medical School and Hospital have expended in buildings and equipment approximately $3,000,000, and nowhere in the world can be found better opportunities for a practical postgraduate training and "brushing up" than are afforded by these schools. Over 300 physicians and surgeons are devoting their time to this work, without one dollar of remuneration, and many of these have, in addition, given largely of their means to make postgraduate teaching in America the great success it has proved to be.

May I cite our Bay State brother to an extract from the Boston *Transcript* of Nov. 17, 1914, a paper which may be profitably read by every good American?

"Nor can there be any question that the establishment of the Polyclinic (1881) was the chief stimulus to the advance of medical thought and science in the United States; a stimulus that was felt, not only throughout this country, in all of whose important cities one or more postgraduate medical schools have been founded, but across the sea as well, where the system has been adopted in London and other cities!"

No matter how "tremendous" may be "the impetus to postgraduate instruction on account of the European War," the two great schools of the metropolis are ready for the hoped-for influx and will meet every requirement.

John A. Wyeth, M.D., New York.

Provision for Infants in Chicago Municipal Tuberculosis Sanitarium

To the Editor:—In connection with the article of Dr. Alfred F. Hess of New York on "The Neglect to Provide for the Infant in the Antituberculosis Program" (The Journal, Dec. 19, 1914, p. 2176), I wish to state that the Chicago Municipal Tuberculosis Sanitarium, which is to open its doors about March 1, contains a provision for the new-born infants of tuberculous mothers. A description of this provision was given by Dr. Charles S. Bacon of this city, in his article published in The Journal, Sept. 6, 1913, p. 750.

The Chicago Municipal Tuberculosis Sanitarium which, with its ultimate capacity of 950 beds, is the largest municipal sanitarium in the country, has a comprehensive provision for children (240 beds for ambulant cases and a special provision for bed cases in the infirmary).

In addition to this the sanitarium has a nursery to which two classes of new-born infants will be admitted: (1) the new-born infants of tuberculous mothers confined in the maternity department of the sanitarium, and (2) the new-born infants of tuberculous mothers remaining at home, who are unable to arrange for safe and proper care of the infant at home.

This is the first arrangement of its kind in the country, and it will no doubt prove of great value in meeting one of the great needs of the tuberculosis situation in a large community. The initial provision in the Chicago Municipal Tuberculosis Sanitarium is for twenty infants, but this will be gradually extended to meet the needs of the situation.

I was very glad to learn from the article of Dr. Hess that this important phase of the tuberculosis situation is in a way to receive due recognition in New York.

Theodore B. Sachs, M.D., President.
Chicago Municipal Tuberculosis Sanitarium.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DENATURED ALCOHOL

To the Editor:—1. By what process is alcohol denatured?
2. Can it safely be used for bathing purposes?

J. G. Pettit, M.D., Weston, W. Va.

Answer.—1. Alcohol ordinarily is denatured according to the following formula: "To 100 parts by volume of 90 per cent. alcohol add 10 parts of approved wood alcohol and one-half of 1 part of approved benzin." In other cases the use of 2 parts of approved alcohol and one-half part of approved pyridin is permitted. Information on this question can be obtained by addressing the Treasury Department, Bureau of Internal Revenue, Washington, D. C.

2. The external use of any alcohol containing wood spirits is unsafe.

REMOVAL OF RUST FROM INSTRUMENTS

To the Editor:—Can you give me a formula for removing rust from instruments? James M. Adams, M.D., Amite, La.

Answer.—Instruments can be prevented from rusting in the process of sterilization by adding some sodium bicarbonate to the water in which they are boiled. A good polishing powder may be of aid in removing rust already formed.

LITERATURE ON FUNCTIONAL TESTS OF THE LIVER AND PANCREAS

To the Editor:—I should like to be informed as to the nature and methods of some of the newer tests of the functioning power of the liver and pancreas. These new tests do not seem to be mentioned in any of the newer works on diagnostic tests which I know of. Any information concerning them, or any literature which describes them, will be exceedingly opportune.

R. J. Midgley, M.D., Salt Lake City.

ANSWER.—The following is a list of published articles on this subject:

LIVER

Schirokauer, H.: Alimentary Levulose Blood Test of Functioning of Liver, *Ztschr. f. klin. Med.*, 1913, lxxvii, Nos. 5 and 6; abst., THE JOURNAL, Jan. 3, 1914, p. 83.
Nesbitt, G. E.: Tests for Liver Function, *Dublin Jour. Med. Sc.*, November, 1913.
Rowntree, L. G.; Hurivitz, J. H., and Bloomfield, A. L.: Phenoltetrachlorphthalein Test of Liver Functioning, *Arch. f. Verdauungskr.*, xix, No. 6.
Arui, T.: Levulose Test of Functional Capacity of Liver, *Deutsch. med. Wchnschr.*, April 16, 1914.
Krumbhaar, E. B.: Present Status of Functional Liver Tests, *New York Med. Jour.*, Oct. 10, 1914.
Chesney, A. M.; Marshall, E. K., and Rowntree, L G: Studies in Liver Function, THE JOURNAL, Oct. 31, 1914, p. 1533.

PANCREAS

Rzasnicki, A., and Landau, A.: Estimation of Pancreas Functioning from Regurgitation of Duodenal Contents in the Stomach, *Ztschr. f. klin. Med.*, 1914, lxxx, Nos. 3 and 4; abstr., THE JOURNAL, Aug. 8, 1914, p. 519.
Matko, J.: Quantitative Test of Pancreas Functioning, *Arch. f. Verdauungskr.*, 1913, xix, No. 6; abstr., THE JOURNAL, Jan. 24, 1914, p. 337.
Piantoni, G.: Tests for Pancreas Functioning, *Policlinico*, July, 1913, Medical Section, No. 7.
Lifschutz, M.: Estimation of Functional Capacity of Pancreas, *Arch. f. Verdauungskr.*, October, 1913; abstr., THE JOURNAL, Nov. 22, 1913, p. 1939.

AUTO ANTIFREEZING SOLUTION

To the Editor:—I want to know the freezing point of denatured alcohol. The question arose while discussing its antifreezing power in comparison with wood alcohol in an automobile radiator. I have no chemistry on that point. B. J. BILL, M.D., Genoa Junction, Wis.

ANSWER.—We have no information on the freezing point of wood alcohol and water mixtures. Mixtures of denatured alcohol with water are used more frequently because of the lower cost of the denatured alcohol (55 cents per gallon, as against 75 cents per gallon for wood alcohol). A mixture of 1 part denatured alcohol and 3 parts water is said to withstand a temperature of 0 F. A mixture of 3½ parts of denatured alcohol and 6½ parts of water freezes at about 15 F. below zero, and a mixture of 4 parts of denatured alcohol and 6 parts of water freezes at about 25 F. below zero.

FINSEN RED LIGHT IN SMALL-POX

To the Editor:—In Abstract 77, THE JOURNAL, Nov. 28, 1914, p. 1939, is the statement that Würtzen insists that small-pox patients, sheltered against chemical light, as in a Finsen red-light room or in a dark room, do not suffer at all from suppuration and the variola changes its character completely.

It may be of interest to know that a distinguished English physician by the name of Gilbert, teaching at Montpellier at the end of the thirteenth century, insisted that his cases of variola be confined in rooms darkened by red curtains and red hangings, thereby lessening the severity of the disease; preventing suppuration and consequent disfiguration. If I am not mistaken Finsen received the Nobel prize in 1903 for rediscovering this fact.

HENRY F. ALBRECHT, M.D., Green Island, N. Y.

ANSWER.—The Nobel prize was awarded to Finsen for his work in phototherapy, particularly in lupus. The physician referred to is John of Gaddesden, court physician to Edward II. The treatment of small-pox by exclusion of light or by red light is said to have been employed since the time of John of Gaddesden by Picton, Black, Waters, Barlow and others. The red light treatment of Finsen has not been successful in the hands of Welch and Schamberg, Rickets and Byles, Brayton and others. See Schamberg, "Treatment of Small-Pox," in Musser and Kelly's "Modern Treatment," ii, 521.

MEDICAL STUDY FOR WOMEN IN VIENNA

To the Editor:—Please let me know whether women are admitted to medical study and examination in Vienna.

EMIL AMBERG, M.D., Detroit.

ANSWER.—In the chapter on "Medical Education of Women" in the Carnegie Foundation Report, Bulletin 6, 1912, p. 324, these statements are made:

"The most recent statistics for Austria show 80 registered women physicians, as compared with 9 in 1905, 34 in 1908; 39 of the 80 are settled in Vienna."

"Elsewhere, men and women attend the same classes and demonstrations, and, as at Vienna and Paris, dissect at the same tables. Coeducation is the general practice on the Continent."

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 5, 1915. Sec., Dr. H. C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 5-6, 1915. Sec., Dr. John Wix Thomas, 200 Nat'l Bank of Ariz. Bldg., Phoenix.

ILLINOIS: Chicago, Jan. 13-15, 1915. Sec., Dr. C. St. Clair Drake, Springfield.

INDIANA: Indianapolis, Jan. 12-14, 1915. Sec., Dr. W. T. Gott, State House, Indianapolis.

IOWA: Des Moines, Jan. 19-21. 1915. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Jan. 5-8, 1915. Sec., Dr. Thomas McDavitt, 814 Lowry Bldg., St. Paul.

NEW MEXICO: Santa Fe, Jan. 11, 1915. Sec., Dr. W. E. Kaser, E. Las Vegas.

NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 5, 1915. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 12-14, 1915. Sec., Dr. John W. Duke, Guthrie.

RHODE ISLAND: Providence, Jan. 7, 1915. Sec., Dr. Gardner T. Swarts, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 12, 1915. Sec. Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 4-5, 1915. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VERMONT: Montpelier, Jan. 11-13, 1915. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: Walla Walla, Jan. 5, 1915. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 12-14, 1915. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

North Carolina June Report

Dr. Benjamin K. Hays, secretary of the North Carolina State Board of Medical Examiners, reports the written examination held at Raleigh, June 9, 1914. The total number of subjects examined in was 14; percentage required to pass, 80, and not less than 35 in any one branch. The total number of candidates examined was 118, of whom 81 passed and 37 failed. Twenty-six candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Examined
Howard University	(1911)	1
Atlanta College of Physicians and Surgeons	(1913)	1
Bennett Medical College	(1913)	1
Tulane University of Louisiana	(1914)	1
Baltimore University	(1893)	1*
University of Maryland	(1912, 1) (1913, 1) (1914, 9)	11
St. Louis University	(1914)	1
Leonard Medical School	(1914)	4
North Carolina Medical School	(1913,2); (1914,16)	18
Jefferson Medical College	(1912,1); (1913,1); (1914,14)	16
Medico-Chirurgical College of Philadelphia	(1912)	1
University of Pennsylvania	(1914)	10
Medical College of the State of S. C.	(1914)	1
Chattanooga Medical College	(1903)	1
University of Tennessee	(1907)	1
Medical College of Virginia	(1914)	12

* Granted a limited license.

FAILED

College	Year Grad.	Total No. Examined
Atlanta Medical College	(1914)	2
Chicago College of Med. and Surg.	(1912,1) (1913,1)	2
College of Physicians and Surgeons, Baltimore	(1914)	1
University of Maryland	(1912)	1
College of Phys. and Surgs., Boston	(1910, 1) (1911, 1)	2
Leonard Med. Col.	(1911,1) (1912,2) (1913,5) (1914,1)	9
North Carolina Med. Coll.	(1903,2) (1912,1) (1913,2) (1914,3)	8
Medical College of the State of S. C.	(1912)	1
Chattanooga Medical College	(1903,1) (1908,1)	2
Meharry Medical College	(1907,1) (1914,1)	2
University of the South	(1905,1) (1909,1)	2
University of West Tennessee	(1912,1) (1914,2)	3
Medical College of Virginia	(1913,1) (1914,1)	2

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Georgetown University	(1901)	Oklahoma
Atlanta School of Medicine	(1909)	Georgia
College of Physicians and Surgeons, Chicago	(1907)	Illinois
University of Louisville	(1893) (1905) (1911,	Louisiana; Tennessee; West Virginia.
Medical School of Maine	(1891)	Mass.

College of Physicians and Surgeons, Baltimore	(1898)	Mass.
Johns Hopkins University	(1913)	Dist. Colum.
Maryland Medical College	(1901)	Mass.
University of Maryland	(1908) (1911)	Maryland S. Carolina
Long Island College Hospital	(1889)	Virginia
University and Bellevue Hosp. Med. Coll.	(1905)	New York
University of Pennsylvania	(1909)	Virginia
Medical College of the State of S. Carolina	(1903)	S. Carolina
Medical College of Virginia	(1906) (1900) (1911) (1912)	Virginia Virginia West Virginia
University College of Medicine, Richmond	(1911) (1913)	Virginia
University of Virginia	(1897) (1908) (1910)	Mississippi New York
University of Edinburgh	(1893)	England

West Virginia July Report

Dr. S. L. Jepson, secretary of the West Virginia State Board of Health, reports the oral, practical and written examination held at Elkins, July 1-3, 1914. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 80. The total number of candidates examined was 34, of whom 32 passed, including 2 osteopaths and 2 failed. Fourteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1914)	81, 82, 83.5, 85, 85.2, 87.8.
Chicago College of Medicine and Surgery	(1914)	85.8
College of Physicians and Surgeons, Baltimore	(1906) (1913) (1914)	85.7; 83, 87; 83.4, 84.3, 84.8, 85, 85.9, 86.5, 87.1, 87.8, 89.4, 90.2.
University of Maryland	(1914)	82.6, 83, 89.2.
University Medical College, Kansas City	(1913)	85
Starling-Ohio Medical College	(1914)	88.1
Medical College of Virginia	(1914)	82, 82, 85, 87, 91.2.

FAILED

College	Year Grad.	Per Cent.
College of Physicians and Surgeons, Baltimore	(1914)	71.7
Maryland Medical College	(1912)	78

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Georgetown University	(1904)	Dist. Colum.
George Washington University	(1907) (1913)	Dist. Colum.
Bennett College of Eclectic Medicine and Surgery	(1906)	Penna.
Kentucky School of Medicine	(1904)	Virginia
University of Louisville	(1912)	Tennessee
College of Physicians and Surgeons, Baltimore	(1896)	Penna.
University of Maryland	(1909) (1912)	Virginia Maryland
Western Reserve University	(1913)	Ohio
Lincoln Memorial University	(1913)	Tennessee
Tennessee Medical College	(1907)	Tennessee
University of West Tennessee	(1908)	Tennessee
Medical College of Virginia	(1901)	Virginia

West Virginia October Report

Dr. S. L. Jepson, secretary of the West Virginia State Board of Health, reports the oral, practical and written examination held at Clarksburg, Oct. 13-15, 1914. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 80. The total number of candidates examined was 11, of whom 9 passed, including 1 osteopath, and 2 failed, including 1 osteopath. Eleven candidates, including 1 osteopath, were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1914)	91
Baltimore Medical College	(1913)	83
College of Physicians and Surgeons, Baltimore	(1914)	80, 84.8, 85.
University of Maryland	(1914)	89
Starling-Ohio Medical College	(1914)	83
Medical College of Virginia	(1904)	89

FAILED

College	Year Grad.	Per Cent.
Meharry Medical College	(1912)	78

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Louisville	(1911) (1912)	Kentucky
Baltimore Medical College	(1911)	Maryland
Maryland Medical College	(1905)	Georgia
University of Maryland	(1911) (1913)	Florida Maryland
New York Homeo. Med. College and Flower Hosp.	(1901)	New York
Eclectic Medical College, Cincinnati	(1913)	Tennessee
Cleveland Homeopathic Medical College	(1905)	Penna.
University College of Medicine, Richmond	(1911)	Virginia

Book Notices

La Stase Intestinale Chronique. Par le Docteur E. Sorrel, ancien interne, lauréat des Hôpitaux de Paris. Paper. Price, 8 francs. Pp. 252, with illustrations. Paris: G. Steinheil, 1914.

The subject of chronic intestinal stasis has become quite popular of late, the term having been popularized by the writings of Lane. In this monograph the author reviews the subject historically, and then enters into an extensive description of the embryology, anatomy, histology and pathology of the large intestine. In discussing the theory of Metchnikoff that not only the appendix but also the cecum and colon are undergoing regression, and that they are not only useless but even harmful organs, the author says, "This appears to be going a little too far, but if it is difficult at least to admit that in a normal state the large intestine is a highly harmful organ it seems to be more admissible that in certain pathological states, particularly when there is a stagnation of the fecal matter, absorption of toxic products may take place from the large intestine and this is a point recognized by all to-day." Under pathogenesis of intestinal stasis the author considers the various theories which have been advanced, such as the cecum mobile of Wilms, typhlatonia of Fischler, habitual tortion of the cecum of Klose, Lane's kink, Jackson's membrane, chronic inflammatory adhesions, congenital folds, Hirschsprung's disease, etc. The author does not believe in Lane's mechanical theory as to the cause of the colonic adhesions, nor is he entirely convinced of the congenital origin of them. He says: "The matter is difficult to decide and it appears in practice one should not trust too much to the possibility of the congenital origin of the lesions, and to infer, therefore, that recurrence will not take place after section. It may be that there were primarily congenital lesions and no less true that at the time of intervention there may be other lesions added thereto, which one ought to take into account when it comes to the treatment." Under treatment the author quotes good results at the hands of and by the methods of each of the originators and defenders of the various theories mentioned. As some of the methods of treatment are the direct opposite of others, it is evident that the good results mentioned must often have been tempered with considerable enthusiasm. The author subdivides the various methods of treatment into three classes, namely, (1) the fixation of a part, (2) the liberation of adhesions of another part, and (3) the diversion of the intestinal contents by entero-anastomosis with or without exclusion, with or without resection. In the author's conclusions it is stated that the methods under the first class have been practically rejected. Those under the second find a more general application, while in the severer cases some of the methods under the third class will have to be resorted to. The volume closes with a report of several cases in which operation was performed according to the various methods by different operators, and a brief summary of the author's conclusions.

Tuberculosis of the Bones and Joints in Children. By John Fraser, M.D., F.R.C.S.E., Assistant Surgeon, Royal Hospital for Sick Children, Edinburgh. Cloth. Price, $4.50 net. Pp. 352, with 215 illustrations. New York: The Macmillan Company, 1914.

As an attempt to cover comprehensively this large and important subject, the book is not satisfactory. The sections on etiology and pathology are good, and form an epitome of the latest and best investigations. Proper emphasis is laid on the importance of recognizing tuberculous cow's milk as a dominant factor in the causation of the disease in children. The sections on diagnosis and treatment are disappointing. The descriptions of operations are often not sufficiently clear to be of use, and in some instances are distinctly incorrect, as in the cases of the Albee and the Hibbs operations on the spine. The photographs and photomicrographs are remarkably good and are valuable. Many of the line drawings, particularly of apparatus, are unworthy of a book of this character, and the crayon reproductions of Roentgen-ray negatives are wholly valueless.

Human Derelicts. Medico-Sociological Studies for Teachers of Religion and Social Workers. Edited by T. N. Kelynack, M.D. Cloth. Price, 5 shillings. Pp. 341. London: Charles H. Kelly, 1914.

This book is intended for the use of social workers, including clergymen, medical officers of health and teachers. The topics treated, each by a different author, include "Idiots and Imbeciles," "Lunatics," "The Feeble-Minded," "The Epileptic," "The Inebriate Derelict," "The Criminal Derelict," "The Recidivist," "The Mentally Defective Criminal Derelict," "The Vagrant," "The Prostitute," "Senile Derelicts," "The Derelict Deaf" and "The Derelict Blind." Naturally, a book which covers so wide a range of subjects within 350 pages cannot undertake an exhaustive discussion of any of them. The treatment, therefore, is that of the practical handbook: a general survey of each topic, a brief bibliography on each, references to recent legislation bearing on the class of derelicts under consideration, and the names and addresses of institutions and societies dealing with such derelicts. While of some interest to American readers, the book will find its greatest field of usefulness in Great Britain, since it is written from a British point of view and the practical information furnished bears chiefly on British institutions and legislation.

Practical Orthodontia. By Martin Dewey, D.D.S., M.D., Professor of Dental Anatomy and Orthodontia, Kansas City Dental College. Cloth. Price, $3.50. Pp. 342, with 248 illustrations. St. Louis: C. V. Mosby Company, 1914.

This book is an attempt to include certain principles which the author has found partially to fulfil the needs of his students. Like all other specialists, on the subject of orthodontia, the author is satisfied to base his premise on occlusion of the teeth, regardless of the etiologic factors giving cause and effect. While it is true that malocclusion will in a small measure influence the teeth in the wrong direction in their development, yet the great etiologic factors governing abnormal development are not appreciated or understood. Until dental specialists and teachers are able to grasp the broader principles of cause and effect, very little scientific progress can expected. Another criticism is the lack of giving due credit to those who have originated ideas and appliances and of which this work abounds. The mechanical appliances and their application are all that are to be desired for obtaining given results. The illustrations, paper and binding are good.

A System of Surgery. Edited by C. C. Choyce, B.Sc., M.D., F.R.C.S., Dean of Operative Surgery in the London School of Clinical Medicine. Pathological Editor, J. Martin Beattie, M.A., M.D., C.M., Professor of Bacteriology in the University of Liverpool. Volume III. Cloth. Price, $7. Pp. 901, with 276 illustrations. New York: Funk & Wagnalls Company, 1914.

This volume, edited by C. C. Choyce in collaboration with a number of notable English surgeons, is on a par with the two preceding volumes. The text is well written, the illustrations illuminating. The contributions are clear and concise, setting forth the essential features of the subjects under discussion. Perusal of the various chapters shows that the latest contributions to surgical knowledge have not been overlooked, while at the same time a certain conservatism is shown in avoiding the recommendation of methods of treatment which have not become recognized procedures by surgeons in general. As a student's text-book and as a work of reference this system of surgery cannot be too highly recommended.

Eye, Nose, Throat and Ear. A Manual for Students and Practitioners. By James Forrest, M.B., Ch.B., Resident Medical Officer Central London Ophthalmic Hospital. Cloth. Price, $4. Pp. 403, with 134 illustrations. St Louis: C. V. Mosby Company, 1914.

This volume is well illustrated and concisely written. Commoner ailments are described fairly completely while rare ones are only mentioned. Operative procedures are described in detail. The book is comprehensive for a manual, and contains a good index. An error, probably in proofreading, that may lead to confusion is found on page 358, where it is stated that esophagoscopy is performed in a similar manner to tracheotomy (tracheoscopy).

Miscellany

The New York Home Hospital—An Experiment

The New York Association for Improving the Condition of the Poor has for two years been carrying on an experiment of unusual interest. A report recently issued gives the experience of the association in conducting what is known as the Home Hospital Experiment, inaugurated two years ago for the purpose of answering, if possible, three questions: 1. Is it possible to treat families in which one or more members are afflicted with tuberculosis, keeping the family together in the home without danger to other members of the family? 2. Do the results of treating patients in their own homes under ordinary conditions of living with adequate medical supervision compare favorably with results secured by removing a patient from his home and treating him in a sanatorium or other institution for tuberculosis? 3. In the case of a family in which there is combined tuberculosis and poverty, which costs more, to treat the family as a unit, as is done at the Home Hospital Experiment, or to break up the home, as is done under other methods of treating families infected with tuberculosis? The limitations of the experiment required that a certain number of families afflicted with tuberculosis should be treated under conditions which would maintain the family life intact and independent, yet subject to the necessary conditions for recovery, and which would restore the family to its position as a self-supporting, wage-earning social unit. As the report truly says: "Tuberculosis is not merely a human disease; it is a social disorder, and the real problem is not alone the patients, but the family and the conditions under which they live." The Home Hospital, the first section of which was opened March 18, 1912, and the second Nov. 24, 1913, consists of forty-eight apartments of from two to four rooms, each including one or more bedchambers with open-air sleeping balconies. No expense was spared to provide these apartments with a maximum amount of sunlight and outdoor air. A solarium, a playground and a fresh-air school were established on the roof of the building. Four of the apartments were used for administrative purposes. In the remaining forty-four apartments selected families were installed, preference being given to families in which both poverty and tuberculosis were relatively incipient, to families possessing sufficient intelligence to cooperate, to families in which dependence was due to tuberculosis infection on the part of the wage-earner and to families in which tuberculosis of the mother rendered it impossible to keep the home intact under ordinary circumstances. This method provided for the oversight and care of children too young to be admitted to hospital sanatoriums, to patients unwilling or unable to leave their families and to the more or less chronic second stage, able-to-be-about cases, which are almost entirely unprovided for by other institutions. Careful investigation of family conditions was made in each case before admission and the plan was explained to each member of the family. All able-bodied persons were required to work and to account to the hospital for the expenditure of their incomes. Supervision and instruction by the resident staff and the attending physicians of the Home Hospital was insisted on. On the other hand, the association furnished to each family everything that was necessary for the maintenance of a normal standard of living and for the medical treatment of the patients in so far as the families themselves were not able to provide it. In a word, the experiment consisted of treating families for tuberculosis and the poverty which results therefrom, instead of treating individuals for tuberculosis alone. The social significance of this experiment can hardly be overestimated.

Space does not permit of a detailed résumé of the methods followed and the experiences acquired. Those interested in this unique experiment and its results will secure a copy of the report and study the details with care. The medical results for the first two years show that seventeen families have been rehabilitated physically and that eight others have been dismissed from the hospital either for frequent intoxication or for persistent refusal to follow advice and direction. The results obtained in the adult cases are 46.6 per cent. apparently cured, 35.5 per cent. arrested and 17.7 per cent. much improved. Every patient who has followed the advice given has improved, with the exception of one patient far advanced, who died 198 days after admission. No well member of any family has developed symptoms of the disease. Economically, the result is equally striking. Eleven families discharged as rehabilitated, had, on entering the hospital, an average. income of $6.34 a week. When discharged the average income of each of these families was $10.75 a week. Of the seventeen families discharged as rehabilitated during the two years of the experiment, the average income on admission was $6.37 a week; when discharged the average earnings were $12.41 a week. In other words, the family income had practically doubled in two years, while the condition of the infected members had greatly improved and the healthy members had been protected from infection. No more dependent invalids had been created, while the families had in each case been taught better, cleaner and healthier ways of living.

Financially, the experiment showed a balance sheet in its favor. Sixty-four families were admitted to the hospital during two years. The average number of individuals per family was five during the first year and 5.09 during the second year. Total days' care for patients and non-patients was 31,505 during the first year and 48,775 during the second year. The per diem cost per family during the first year was $3.54, during the second year, $3.32. The per capita per diem cost of both patients and non-patients was 70.8 cents the first year and 65.03 cents during the second year. Exclusive of administration, the per capita per diem cost was 50 cents and during the second year 47 cents. The total cost of the care of the sixty-four families during two years was $61,932.96, of which living expenses cost $38,000, administration and supervision $15,000, and general operating expenses made up the balance. The earnings of the families amounted to $15,313.06, making a total expenditure by the Home Hospital of $49,619.90. Doubling the capacity at the end of the first year reduced the cost of supervision and administration both per family and per capita.

An itemized statement of the various expenses is worthy of careful study, but cannot be quoted in detail. The essential factor in the entire plan, however, is the comparative cost of the Home Hospital and of the ordinary institutional method of treatment. In determining the average cost of institutional treatment, data from a large number of sources are assembled and analyzed, with the result that the average cost of maintenance of an advanced tuberculosis patient in an institute is estimated at $1.40 a day or $9.80 a week. The average cost of institutional maintenance for children and infants is standardized in the same way. Careful comparison is instituted in the case of different types of families; that is, those in which all members are infected, those in which all except the father and wage-earner are infected, etc. Comparison of the relative expense, in the case of a family in which the mother and one or more children have tuberculosis, and in which, under ordinary conditions, the family would be broken up and all except the father sent to public institutions, shows that under such a plan the net cost of maintenance, after the father's earnings are deducted, would be $23.75, which expense would fall on the public, while under the Home Hospital plan of keeping the family intact, the net cost after deducting the father's earnings is only $17.61, a saving of $6.14 a week, or $319.28 a year. The family is kept intact, the father and wage-earner is given a home, and the evils resulting from disruption of the family and institutional life are avoided. The actual cost of caring for tuberculosis families of all classes in the Home Hospital was found to be less than the cost of caring for the same family in institutions, while the social advantages gained by avoiding breaking up the family, depriving the well members of a home, subjecting the infected members to institutional conditions and increasing rather than correcting the dependency of the family, clearly shows the superiority of the home method over the ordinary institutional plan.

The experiment is one of the greatest importance and interest. Whether such methods can be applied to large numbers of families rather than to a few carefully selected ones, remains to be shown, but the experiment is a demonstration of the possibility of developing rational methods which will not disturb normal social and domestic conditions, and which will at the same time relieve the individual of the disease and the family of the social and economic consequences.

Medicolegal

Prosecution Under Wrong Provision and Indictment Erroneously Changed

(Rutherford vs. State (Tex.), 169 S. W. R. 1157)

The Court of Criminal Appeals of Texas reverses a conviction of pursuing the occupation of itinerant physician, going from place to place, in the practice of that profession, without paying the tax levied by law. The court says that it does not think the evidence would sustain the conviction. The evidence conclusively showed that the accused had been a resident of the city of Vernon for more than a year at the date of the institution of these proceedings, and that he was guilty of violating that provision of the code prohibiting any one practicing medicine without having obtained a license from the medical board and registering same, and not the article preventing one from practicing medicine as an itinerant physician without having paid an occupation tax. Had he paid the occupation tax under the evidence in this case, he would not have been authorized to practice medicine, and, as the evidence clearly showed that his fixed residence since he had been in the state had been at Vernon, he would not be liable for the tax levied on traveling physicians. Furthermore, in that part of the indictment wherein it was intended to allege that he "followed the occupation of physician, traveling from place to place," etc., the word "physician" was written "physicial," an "l" being written where it should have been an "n." It was moved to quash the indictment because there was no such occupation taxed as a "physicial," but, instead, the trial court ordered the clerk to change the indictment so as to read "physician." This it had no authority to do, as this word was a matter of substance in the offense charged, and, under the code of criminal procedure, an indictment cannot be amended in matter of substance. An indictment thus altered will not support a conviction. But had the trial court not undertaken to change the wording of the indictment, the whole context might have been sufficient, notwithstanding this mistake in spelling the word "physician."

Admissibility in Evidence of Physician's Book of Visits and Proof of Accounts

(Bellows vs. Bender et al. (N. Y.), 149 N. Y. Supp. 548)

The Supreme Court of New York, Appellate Term, Second Department, reverses a judgment entered for the plaintiff, a physician, against the defendants, executors, for professional services rendered to their testator, a new trial being ordered because of error in the admission in evidence of the physician's book of visits and proof of claim. The court says that the plaintiff was permitted to testify that the book was one in which he kept the accounts of patients visiting him and whom he treated; that the entries were made by him on the respective dates shown by the entries; that the book showed an account with the decedent; that the page of his account book purporting to show his attendance in this case was an account which he made up and entered each time the patient came to his office. Besides proving by another physician, who claimed to have been present at the plaintiff's office on the occasion of some visits made by the patient to the plaintiff, and who gave no evidence regarding the book entries, there were called by the plaintiff two patients or persons by whom it was sought to prove that they had settled their accounts with the plaintiff by his books. Unless it was made clearly to appear that these two persons, or at least one of them, had settled his accounts with the plaintiff according to his books and on the strength thereof, the proof that the book was correct was made by the plaintiff alone. One of the witnesses testified that whenever the plaintiff rendered a bill he paid it, that he kept track of all his visits, "but no track of his books." The second witness, when shown what purported to be her account, said that she had never seen that account before, and, like the other witness, testified to nothing from which it could be found that she had settled her accounts with the plaintiff from his book. To make such witnesses competent, they must testify that they settled their accounts by the plaintiff's book, and not by bills rendered to them. In Swan vs. Warner, 197 N. Y. 190, which was an action brought to recover for professional services rendered as a physician, the court reiterated the much-cited rule governing the admission of a party's books "for the purpose of sustaining his claim in an action like this," that rule being: "They ought not to be admitted where there are several charges, unless a foundation is first laid for their admission, by proving that the party had no clerk, that some of the articles charged have been delivered, that the books produced are the account books of the party, and that he keeps fair and honest accounts, and this by those who have dealt and settled with him." If the foregoing analysis of the testimony was correct, there was nothing left in the case to prove that the plaintiff kept correct books of account, apart from his own testimony, and that was insufficient to authorize the reception of a book under the account book rule. In the case of a physician, the books should show visits to patients, regularly entered in the course of professional duties. Their total number furnishes a basis for proof by other physicians of value according to the accustomed charges in the locality, and when coupled with independent evidence that some of the visits were actually made, and that other patients had settled their accounts with the physician from his books, the entries of his visits or attendance on them therein stated being correct and true, a physician's book of visits is then open for the inspection of the court, and, if found free from suspicion and sufficiently orderly to convey intelligence on perusal, the book becomes competent evidence of the visits before the court or the jury, as the case may be. Nor could the value of the plaintiff's services be proved by an entry which he made of a bill sent to the estate.

Manslaughter in Death from Roentgen Rays—Culpable Negligence—Judicial Notice

(State vs. Lester (Minn.), 149 N. W. R. 297)

The Supreme Court of Minnesota affirms an order overruling a demurrer to an indictment charging the defendant with manslaughter in the second degree, under a statute declaring manslaughter to be of this degree when committed without any design to effect death, "by any act, procurement or culpable negligence" not constituting a higher crime. The indictment alleged, among other things, that the defendant, without authority of law, but without a design to effect her death, did feloniously use and employ on the body of a named patient a Roentgen-ray machine for the purpose of taking a roentgenogram of her hip for his own sole use and purpose, with her consent, extracted from her on his assurance that it would do her no harm; that the machine was dangerous, except when operated by a skilful manager, which the defendant knew, or, in the exercise of the care required under the circumstances, he should have known, and yet he placed the tube unreasonably close to her body, and, disregarding his duty to her, he negligently and carelessly failed to give her proper attention, operated the machine in an unskilful manner, and kept her body so exposed for an unreasonable length of time, thereby inflicting on her body, in the region of the right hip, a mortal burn, from which she died. The court thinks the indictment sufficient, although it was not a model one.

The important question was whether the criminality of the defendant's acts as constituting the crime of homicide by "culpable negligence" was sufficiently alleged. Not every careless or negligent act whereby death ensues comes within the statute, and something more must appear than the essentials necessary to impose civil liability for damages. When considered as the basis of a charge of manslaughter against a medical man, or person assuming to act as such, culpable negligence exists where he exhibits gross lack of competency or inattention, or wanton indifference to the patient's safety, which may arise from his gross ignorance of the science or through gross negligence in either its application or lack of proper skill in the use of instruments. Where, however, he does nothing that an ordinarily skilled and careful practitioner might not do, and death results merely from an error of judgment or accident, no criminal liability attaches. "Gross," as here used, is intended to convey the idea of recklessness with regard to the safety of others, or "foolhardy presumption."

The failure to allege knowledge on the defendant's part that his acts involved probability of serious consequences to the patient was not fatal to the indictment, the defect, if any, in this regard, being cured by the presumption of contemplation of probable consequences. Neither was it necessary to allege the defendant's duty to the patient under the circumstances, nor to set up a specific standard by which his acts might be measured, these being matters of law. If, then, the facts alleged showed such incompetency or inattention or indifference to the safety of the patient as has been indicated as necessary to give rise to criminal liability, the indictment must be upheld, though it charged neither "culpable" nor any other degree of negligence by name, nor the defendant's acts in other than general terms and as ultimate facts.

The court takes judicial notice that Roentgen-ray machines sometimes inflict serious burns, and the indictment characterized the instrument used as dangerous, unless skilfully handled, and presumptively known to the defendant to be such, notwithstanding which he placed it too close to his subject, and also failed during an excessive exposure to give the attention requisite to prevent injury. These allegations imported criminal negligence.

Society Proceedings

JOINT MEETING OF THE NEW YORK NEUROLOGICAL SOCIETY AND THE NEUROLOGICAL SECTION OF THE NEW YORK ACADEMY OF MEDICINE

Held Nov. 10, 1914

Dr. Smith Ely Jelliffe in the Chair

Scleroderma, with Contractions

Dr. S. P. Goodhart: An unmarried girl, aged 24, about nine years ago noticed a swelling of the toes, followed by increasing stiffness of the toes and knees, and a feeling of coldness and weakness in the lower extremities, with paroxysmal attacks of whiteness of the skin of the hands, together with pain and tingling. With the disappearance of the blanching, the hands would become congested and then cyanotic. The hands lost in function, and flexure contractures soon appeared. These symptoms for a time increased in severity and then remained stationary. About five and a half years ago, the patient noticed pigmentation of the chest and a peculiar stiffness of the face, so that she was scarcely able to open her mouth. Some months later there was some improvement in the power of moving the knees and toes. When the weather was cold she noticed a numbness of the nose and tongue, but not of the lips or ears. The legs could be separated for a distance of only about 6 inches at the knees, owing apparently to fixation at the hip joints. Over the feet there was a hide-bound condition, but less marked than in the hands, which presented the typical appearance of a pronounced sclerodactylia. The face was distinctly masked in character, with all lines obliterated: the palpebral fissures were wide, giving a strange expression to the eyes. The margins of the lips were very narrow, and the mouth was held stiffly and always partially open, giving rise to a mummified expression. The nose was narrow and angular. The ears, which were indurated, thin and blanched, were held rigidly down. The mucous membrane of the mouth was becoming involved, showing some induration to the touch. The scalp showed no abnormality. The mammae were fairly well developed. Trophic disturbances were well marked over the small joints of the fingers and toes. The skin showed glossiness as well as pigmentation. Many scars were present, due to previous ulcers of the fingers and toes. A few years ago there was a slight but manifest diminution to painful stimuli from the finger-tips up to the wrists: this was also true of the feet and ankles. At present, no sensory changes were found excepting that there was a lack of proper appreciation of hot and cold stimuli.

DISCUSSION

Dr. Walter Timme: This condition is one of generalized connective tissue hyperplasia; the scleroderma is only a single manifestation. This hyperplasia is secondary, as a rule, to a disturbance of the sympathetic and autonomic nerve supply. In most of these cases there is a history of an antecedent high grade sympathicotonia, and as this increases, tissue hyperplasia begins, sometimes in the muscles and joints, and occasionally in the thyroid, the hypophysis cerebri and blood vessels. It is an overactive sympathetic and an underactive autonomic system. In the end, it probably resolves itself into a question of disturbance of the internal secretions, and from a therapeutic point of view we have seen some benefit from the use of various internal secretions.

Pilous Cerebral Adiposity

Dr. Walter Max Kraus: The patient, man, aged 31, had been accustomed to drink from five to seven glasses of beer daily up to the onset of his present illness in 1910. He smoked moderately. He gave a history of measles, chickenpox, diphtheria and whooping-cough in childhood, and some form of arthritis from the age of 24 (1908) until one year ago. The soles of his feet were sore, and later the tissues about the knees became red, swollen, hot and painful. After several of these attacks, there was some limitation of motion, but one year ago, the patient was cured. Between the ages of 3 and 4 years he fell from the fifth story of his residence to the ground, resulting, as he states, in a fracture of the crown of the skull. He was unconscious for about fourteen hours and disabled for six months. From that time until the age of 13 he was entirely well. Then he began to have attacks of Jacksonian epilepsy, which occurred from three to six times yearly and were not of sufficient severity to cause the patient either to tell his parents or seek the aid of a physician. At the age of 25, a little over twelve years after the first attack, the attacks ceased and had not since recurred.

Four years ago, at the age of 27, the patient began to grow fatter. At that time his weight was 150 pounds; in 1912 it had increased to 204 pounds; in 1913 to 263 pounds, and his weight at the present time is 282 pounds. At about the same time as this increase in adipose tissue began, the following symptoms made their appearance: His hair began to increase over the trunk and extremities, he felt sleepy, and as time went on he would fall asleep involuntarily in addition to sleeping a good deal voluntarily. In 1910, while driving a large automobile truck, he fell asleep, allowing the truck to run into a building. These narcoleptic attacks have continued since. The patient's appetite for food, especially meat and carbohydrates, has increased. He also complains of shortness of breath and sweats a good deal. Three and a half years ago he noticed that the penis was smaller and that shortly afterward his sexual desire grew less until now he has none at all.

DISCUSSION

Dr. I. Abrahamson: In Mount Sinai Hospital there is now a young woman with very similar manifestations. She gives a history of amenorrhea, hyperhidrosis, peculiar skin changes and adiposity; she complains of sleepiness and has a growth of hair on the face and body, but the urine contains sugar and shows evidences of an advanced nephritis. A blood count gave 6,100,000 red cells and 10,000 white cells, with 110 per cent. of hemoglobin. The urine constantly contains a small percentage of sugar. The facies is like a typical one of polycythemia. The moist skin in this case might be attributed to the nephritis as well as the polycythemia, but is most likely a part of the polyglandular disease.

Dr. Walter Timme: The hypertrichosis present in this case is not quite as generally distributed as stated. On closer inspection it is seen that the distribution is radicular in character, and furthermore skips the areas supplied by the cervical roots, to begin again at the dorsal level. This arrangement corresponds with the position of the cells of the superior spinal sympathetic nucleus, which is non-existent in the cervical region of the cord, and begins at about the first dorsal level. This is rather suggestive, therefore, of sympathetic involvement.

AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY

Fifth Annual Meeting, held at Boston, Nov. 12-14, 1914

Under the presidency of Dr. J. Whitridge Williams, Baltimore

Prenatal Care

Dr. Arthur B. Emmons II, Boston: Prenatal care is preventive medicine as applied to obstetrics. To obtain the greatest efficiency there must be cooperation of the various scientific laboratories in the medical school to further our knowledge. The medical societies and journals should disseminate authoritative knowledge. The hospitals must also cooperate by providing ample care for doubtful and dangerous cases. The state and municipal health boards, milk stations and social forces, both public and private, should cooperate to make its application to the community possible, as well as the efforts of patient and family.

DISCUSSION

Mrs. Max West, Federal Children's Bureau, Washington, D. C.: Two of the most important pieces of prenatal work in this country are those undertaken in Boston in 1909 by the Women's Municipal League, and in New York in 1911 by the New York Milk Committee. The statistical results of these two experiments prove conclusively that prenatal care, systematically and intelligently given, lowers the number of stillbirths and miscarriages, decreases the number of babies who die under 1 month of age, and increases the number of breast-fed babies. In Boston the stillbirth rate was about 40 for every thousand living births; among supervised mothers it was about 28. In New York the rate was 47.5 for Manhattan at large, and 39.8 among supervised mothers. In Boston the average weight of the babies of supervised mothers was 7 pounds, 11 ounces, including prematures, an increase of several ounces over the usual average. The importance of prenatal care in establishing breast feeding is shown in every city where records have been kept. Prenatal work is now being done to a greater or less extent in about forty cities of this country, by fifty or more organizations, but is yet in its infancy.

Dr. S. Josephine Baker, New York: Among the mothers that have been under our care, approximately 500, we have had no deaths; 96 per cent. of the babies born are living now; the deaths under 1 month per thousand births have been reduced about one-half. We have used the infants' milk stations as centers; here the women are registered, and they are visited every ten days before confinement and every day for ten days after birth of the baby, when they are referred back to the milk station for observation.

Miss Fanne F. Clement, Superintendent, Red Cross Town and Country Service, Washington, D. C.: In small communities the visiting nurse has perhaps from one to six physicians under whose direction her actual nursing services are rendered. If there is but one, as not infrequently happens, it becomes absolutely necessary that she have his good will and cooperation; otherwise her work cannot succeed. This attitude on the part of the physician in the country is a much more important item than in the city, where the sphere of the public health nurse as it relates to the medical profession is much better understood; not only by doctors but by the laity in general, who lend her moral support. The absence of hospitals, dispensaries and other health agencies in country districts leaves the greater responsibility in the hands of physicians and visiting nurse agencies in these sections, on whom it devolves to create and extend a public sentiment favorable to health. Not only are physicians in rural communities often few, but in many instances their lack of proper professional equipment and their unconcern for up-to-date knowledge in preventive medicine create a difficult situation for the public health nurse who has had special training for her work. Regarding prenatal visiting particularly, this has been found to be the case. A rural nurse in Maine reports that she is not permitted by the local doctor to make prenatal visits except in special instances. In a Pennsylvania community of 8,000 foreign population, where the visiting nurse is employed by an industrial company, she has gradually come to know practically every family. It has been her special endeavor to become friends with the mothers, so that they would allow her to make prenatal visits and be induced to employ physicians when their babies were born. Because a few mothers, in the beginning, liked the way the nurse cared for their babies, and first of all because they liked the nurse, all the mothers now call her, which means that the opportunity for prenatal visiting is greatly increased, that a physician is in attendance during delivery and that the midwives are seeking new fields. The two or three physicians with whom she works turn over to her charge expectant mothers reporting to them, and she visits them weekly.

Care of Institutional Infants Outside of Institutions

Dr. J. H. Mason Knox, Jr., Baltimore: Out of 229 foundlings committed by the city to institutions in the last ten years, 204, or 88 per cent., died within a few weeks. Many of these children were diseased and weak, but the large majority were healthy new-born babies, whose lives were lost simply because their environment was not suited to their needs. The institutions to which they were committed were excellent of their kind, good milk, regular feeding and kindly nursing was furnished. The thing that was lacking, and which seems to be essential for baby life is individualizing, motherly care and quiet.

Mortality in So-Called Foundling Institutions

Dr. Philip Van Ingen, New York: From 1909 to 1913 inclusive, 28,210 children under 2 years of age were cared for in eleven institutions in New York state, and the death rate for babies under 2 years for the same period, based on the total number of children cared for, varied in the different institutions from 183 to 576 per thousand, with a general mortality rate for the eleven of 422.5 per cent. for the five years. During the years 1909 to 1912 inclusive, the death rate for children under 2, based on the estimated population for the state at that age, was 87.4, practically one-fifth of that in institutions. In one institution which has a large maternity service, there were only four deaths of babies during the first week of life among 298 born during the year, a death rate of 13.4 per thousand, or 3.9 per cent. of the total mortality under 1 year. In a very high class obstetric hospital, the death rate under 7 days was 25.4. For the Borough of Manhattan it was 23.7, or 17.8 per cent. of the total deaths under 1 year. The stillbirth rate was 32.5, while that for Manhattan Borough was 48.1. After the first two months, however, this favorable start was overcome and the general death rate under 1 year of age for this group of babies was 488 per thousand. Of 1,738 babies admitted at various ages under 1 year, 22.7 per cent. died before completing the first month of residence and 34.9 before completing the second month. Of all deaths, 44.3 per cent. occurred in less than one month after admission, and 68.7 per cent. in less than two months.

University Extension Work for the Prevention of Infant Mortality

Dr. Dorothy Reed-Mendenhall, Madison, Wis.: The fundamental reason for high infant mortality in the rural districts is neglect of the childbearing woman. In country districts in Wisconsin deaths from puerperal fever, birth injuries, malformations and prematurity are about one-third more common than in the cities, and we have had larger statistics of still-born children in the rural districts, caused by neglected pregnancy and labor; this is easily doubled in the country districts as compared with the cities. The community welfare work of the University of Wisconsin has been in existence a little over two years; therefore the results are too small to make very much of. I believe, however, that we are meeting a hitherto unmet need of the community, and for this reason our work is of fundamental interest. Briefly, these are the methods: An advance agent is sent ahead, and a moral or welfare survey of the community or small town, usually a town of from one thousand to five or six thousand, is made, and in that way the special needs of the community, whether hygienic, moral or social, are found out. Then the university sends out experts from the university extension staff to talk on topics that have been suggested, such as the care and physical conditions of infants; why women should so often miscarry; why the children are still-born; why there is so much suffering from injuries incidental to childbirth; why they had caked breasts, milk-leg and fevers after childbirth, and talks on the care of the mother before and after confinement, as well as the care of contagious diseases in the home.

The Relation of Gynecologic Surgery to Bad Obstetrics

Dr. Edward Reynolds, Boston: Obstetric mortality is now generally low, but much of a woman's subsequent health depends on the conduct of her confinement. Poor attendance is usually followed by some degree of chronic ill health, which is sometimes subsequently remedied by a well-attended confinement. The ill effects of bad obstetrics may be either directly constitutional or the result of local injuries or infections. Bad obstetrics contributes to gynecologic surgery, chiefly tears, tubes and misplacements. Much depends on adequate care during convalescence. Obstetric care is in general much better than formerly, but there is still much room for improvement.

The Need of Hospitals for Maternity Surgical Cases

Dr. Edward P. Davis, Philadelphia: The advantages of the modern hospital for cases of parturition requiring assistance cannot be denied. The risk of infection and hemorrhage are reduced to a minimum, suffering is prevented, the patient is put in condition to make a prompt and thorough recovery, and the lives and health of mother and child are conserved by all the methods of modern science. What is needed to give confinement cases adequate hospital care is an adaptation of accommodations to the means of the community. Hospital beds at a price of from five to seven dollars per week, in small wards, are usually within the reach of any man who has work. A certain number of absolutely free beds should be available for those who honestly cannot pay. These small wards should be thoroughly comfortable, the friends of the patient should have access to her at definite hours, and the patient and her husband should be made to feel that their effort to compensate the hospital are appreciated and respected. The greatest need in hospital accommodations for confinement at present is private rooms at from ten to fifteen dollars per week.

Teaching Obstetrics: Necessary Equipment

Dr. W. W. Chipman, Montreal: The imperative and the absolute need is for a larger and more adequate teaching service in our hospitals and dispensaries. Each and every hospital is so much the better in its adequate care of the sick by very reason of its teaching; it is thereby saved from

Chauvinism and decay. This provision of clinical service is both the duty and the privilege of the laity to bestow. Each and every lying-in hospital should, if possible, be affiliated with a teaching school. The hospital is, or should be, the student's workshop. He begins at the beginning, doing things, and it is only in, and by, such service that he gains in any sense professional wisdom. For obstetrics, all this means the lying-in hospital.

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Nov. 23, 1914

Dr. James E. Talley in the Chair

Cirrhosis of Liver and Peritoneal Tuberculosis

Drs. B. F. Stahl and Norman B. Gwyn: A woman, aged 58 years, complained of pain in the lower left axilla. For many years she had been a steady drinker. She had been feeling poorly for about five weeks and occasionally was feverish. There was complete absence of physical signs, except a few crepitations in the left axilla. No malarial parasites could be found; the Wassermann test was negative, the tuberculin test weakly positive; the sputum was repeatedly negative for tubercle bacilli. The patient ate and slept well. A gradual wasting without pronounced anemia took place. At the end of five weeks there was distinct yellowing of the conjunctivae and enlarged veins coursing up over the thorax and down to the groins. The patient failed rapidly. Three days later swelling of the abdomen began and pain in the right side of the abdomen became marked. Four days later signs of fluid in the abdomen were distinct. At no time in the last ten days of life did it seem likely that operative measures would avail. The necropsy showed atrophic cirrhosis of liver, the organ being deeply indented, suggesting a syphilitic process. There was a small area of tuberculosis in the left upper lobe anteriorly. The interior of the abdominal wall was studded with irregular, small nodules; the mesentery studded with irregular, small nodules with hemorrhagic tops. The serous coat of the intestines had lost its gloss and a fine fibrinous layer was over all. In a good light minute tubercle-like formations were evident in abundance. The lower 8 cm. of the cecum was an immense, ulcerating, thickened mass; there were other ulcerations in the intestines, evidently tuberculous. Sections showed that the condition was tuberculous. Tubercle bacilli were found in macerated tubercles from the peritoneum.

DISCUSSION

Dr. John K. Mitchell: I had under my care about four years ago a somewhat similar case, in which the fever lasted for six months. Every night, with one or two exceptions, the man had a temperature of from 102 to 103.5 F. Tests of urine, feces and blood were negative. There were numbers of crystals of uric acid in the sweat, the odor of which was so bad that the man was obliged to get up in the night and take a bath. I sent him to the country and had him sleep outdoors. After two or three weeks the temperature fell and the man recovered in six or seven months. He is now perfectly well and weighs 190 pounds. The diagnosis is still in abeyance.

Dr. Robert N. Willson: Last year I saw a little girl who had what seemed to be a low grade bronchopneumonia. For two or three days her temperature was normal. Following that she would have a rise of temperature and then a return to normal. Headache was the only other symptom. This lasted for four months. Tuberculin tests were always positive, but we could not put our finger on a focus. Finally the abdomen became greatly distended. We operated and found in the center of the abdomen a large caseous tuberculous mass. This was removed with a tremendous loss of blood and the child died that night. Up to the day previous to the operation there was no suggestion of an abdominal condition, except a little tenderness over the appendiceal area.

Dr. Joseph Sailer: The association of tuberculosis and cirrhosis of the liver is interesting. In my experience with cirrhosis of the liver not one patient out of twelve had tuberculosis. In a case of prolonged fever there was also failure to reach a definite diagnosis. All tests were negative. The patient neither wasted nor gained and had a temperature between 99 and 100 F., occasionally reaching 101. This was before the days of the Wassermann test. On the basis of the possibility of syphilis, antisyphilitic remedies were used, but without result. Another patient had a daily temperature of 100 F. During six months' observation nothing definite appeared. The woman gained about 7 pounds on a prolonged rest cure, but did not lose her fever. Prolapse of the uterus was the only definite gynecologic symptom. Dr. Clark operated and a fairly large solid ovarian tumor was removed. The patient's temperature became normal and she completely recovered her health.

Dr. William M. L. Coplin: One point not accentuated is that in post-mortems we see an unusual type of tuberculosis in which caseation or other form of necrosis is slight or absent. The masses on the peritoneum in this case were elevated with hemorrhagic summits, often appearing almost papillomatous; the sand-grain surface of miliary tuberculosis was absent. There were one or two ulcers in the intestine, typically tuberculous. In many of these irregular forms of tuberculosis it is possible that we may find a tubercle bacillus of an unusual type. There is a fibrosclerotic change in the nodules which is very conspicuous. The appearance is almost that of complete healing, with absence of caseation, bringing forward the suggestion urged by French writers that there is a fibrogenic toxin produced by the tubercle bacillus differing from caseogenous toxin so characteristic of tuberculosis.

Typhoid Complicated by Orchitis

Dr. S. H. Rosenthal: The patient, aged 18, passed through a mild attack of typhoid; the temperature became normal on the thirteenth day. Twelve days later the patient was seized with intense pain in the left lower portion of the abdomen The temperature rose to 101 F., pulse rate, 120; leukocyte count, 28,000. Distinct rigidity and tenderness were present in this area and the patient vomited twice. The following morning the pain shifted to the left testicle, the abdominal pain subsiding. The testicle and epididymis were found very much swollen and tender and the scrotum inflamed, with tenderness along the vas and enlargement of the left inguinal glands. The leukocyte count gradually fell to 9,000. Twenty days after the onset of this complication an incision was made in the left testicle and pus was found. Typhoid bacilli were obtained in pure culture and were agglutinated by the patient's serum and the serum from another known typhoid case. The patient is still in the ward, the wound draining. There is no history of venereal infection. Orchitis and epididymitis are comparatively rare complications of typhoid fever, the percentage being about 0.2. Only a few more than 100 cases have been reported. Some arise from thrombosis of the spermatic veins; in a few the typhoid bacilli gain access to the epididymis and testicle by way of the vas from the urine, but in the majority of cases the source of infection is in the blood. The complication occurs most frequently between the ages of 15 and 25, appearing late in the disease or in convalescence, lasting from twelve to eighteen days and terminating in resolution, although induration and atrophy of the testicle or suppuration may occur. In the presence of suppuration there is apt to be extensive sloughing, which practically destroys the entire testicle.

DISCUSSION

Dr. Alfred Stengel: I believe that the estimate given by the latest literature of 108 cases of this complication of typhoid fever is far below the actual number. This opinion is strengthened by the personal observation of about six cases in 350 cases of typhoid. This is a late complication, and the confusion between a gonorrheal process and one due to typhoid is, therefore, not so likely to occur as one might at first think.

Dr. Joseph Sailer: The interesting features in this case are the pain referred to the abdomen from the very beginning, and the marked leukocytosis. I have not seen a frank case of orchitis such as this is, and I have seen at least 350 cases of this complication.

The Abderhalden Test with Its Relation to Disease of the Liver

Dr. Joseph Sailer and Dr. T. G. Schnabel: We obtained the following results in 43 cases examined: Five cases of secondary malignant disease of the liver, all strongly positive; 2 cases of cholelithiasis, 1 strongly positive and 1 faintly positive; 1 case of cholecystitis with adhesions and jaundice, moderately positive; 5 cases of atrophic cirrhosis, all probably alcoholic, 2 moderately positive, 2 very strongly positive and 1 negative; 4 cases of passive congestion of the liver secondary to cardiorenal disease, all strongly positive; 2 cases of enlarged liver, positive; 1 case of suspected liver disease without definite symptoms, faintly positive; 3 cases of syphilitic cirrhosis with Wassermanns all positive; 1 of these positive after the injection of salvarsan; 2 cases of hypertrophic cirrhosis, both positive. One case of renal insufficiency one week after induced abortion gave a strong reaction with liver, strong reaction with thyroid and intensely strong reaction with placenta. Another case of supposed puerperal infection gave a strong reaction with placenta, but none with either liver or thyroid. In a case of suspected pregnancy, afterward proved not to be, there was no reaction with either tissue. In two cases of lobar pneumonia the serum of both showed dialyzable substances and gave a positive reaction with ninhydrin. In one case of myxedema a very faint reaction was obtained with liver substratum but no others. In one case of known pregnancy there was no reaction with liver tissue, faint reaction with thyroid, and strong reaction with placenta. In a case of malaria there was a strong reaction with liver tissue, with kidney tissue, and with thyroid tissue. In a case of multiple serositis there was a faint reaction with liver, thyroid and placenta. In a case of recurrent alopecia, which had been diagnosed by two other physicians as disturbance of the thyroid gland, there was no reaction with any substratum. On the whole, the results indicated that the reaction was positive in the majority of known cases of liver disease and occasionally positive in cases not known or supposed to be liver disease, and in which the complete demonstration of a normal liver naturally could not be made.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

December, XXXV, No. 12, pp. 639-687

1 Hospital Treatment of Inebriates. T. D. Crothers, Hartford, Conn.
2 Importance of Pure Milk for Infants and Infant Feeding. H. L. K. Shaw, New York.
3 Exophthalmic Goiter. J. L. Loutfian, Coxsackie.

American Journal of Orthopedic Surgery, Philadelphia

October, XII, No. 2, pp. 201-378

4 *Histology of Bone Graft. W. E. Gallie, Toronto.
5 *Experimental Study of Osteogenesis. L. Mayer, New York, and E. Wehner, Munich, Germany.
6 *Ununited Fractures with Study of Bone Repair. G. W. Hawley, Bridgeport, Conn.
7 Treatment of Paralytic Scoliosis by Bone-Grafting. H. P. H. Galloway, Winnipeg, Canada.
8 Pott's Disease; Albee's Bone-Grafting Operation. Results in Series of Twenty-Six Cases. E. W. Ryerson, Chicago.
9 Artificial Ankylosis of Spinal Vertebra. H. B. Thomas, Chicago.
10 Architecture of Tarsus. A. Steindler, Des Moines, Ia.
11 Pathologic Report of Case of Vertebral Osteo-Arthropathy (Charcot's Disease of Spine). S. F. Jones, Denver.
12 *New Physical Sign in Certain Lesions of Lumbar Spine. L. W. Ely, San Francisco.
13 Subluxations of Atlas on Axis. C. Ogilvy, New York.
14 Report of Three Cases of Partial Luxation of Atlas on Axis. J. D. Griffith, Kansas City, Mo.

4. **Histology of Bone Graft.**—Experiments were conducted by Gallie with a view to determining the successive histologic changes which occur in bone transplants. In each case the periosteum was removed from the graft before it was inserted. In four experiments the grafts were autogenous and the specimens were recovered after the lapse of one, two, three and eight weeks, respectively. In one experiment the graft was autogenous, but boiled before insertion. In another experiment a piece of cat's bone and in still another experiment a piece of human bone was grafted into a dog. These experiments demonstrated that following the successful transplantation of such bone grafts the following changes occur: 1. Death of the graft. 2. Revascularization of the graft. 3. Concomitant absorption of the dead bone and production of new bone by the bone cells which invade the graft along the route of the new blood-vessels. The experiments showed no difference in the value of fresh or boiled bone as a transplant and no difference in the gross and histologic changes, incident on the introduction of autogenous and heterogenous bone grafts.

5. **Experimental Study of Osteogenesis.**—All four series of experiments performed by Mayer and Wehner—transplants of periosteum, subperiosteal resections, cap implantations and bone transplants—combined to emphasize the osteogenetic function of the specific osteoblastic cells of the periosteum and the inability of the adult bone-cell to form new osseous growth. Bone growth occurred in all the transplants of periosteum, and from the periosteum after subperiosteal resection; it was, however, absent in the cap experiments in which the ingrowth of periosteum had been excluded. In the bone transplants, the adult bone-cells of the graft gave no evidence of activity whereas the periosteum showed marked osteoblastic properties. Similar osteogenetic power was manifested by the transplanted endosteal cells lining the marrow cavity and the Haversian canals, provided their vitality was maintained by intimate union with the tissues of the environment.

Bone macroscopically bare of periosteum was successfully transplanted into the soft parts, not because the bone cells gave rise to new bone formation, nor because of a metaplasia of the surrounding connective tissue cells into osteoblasts, but because of adherent periosteal cells, and of living endosteal cells. The practical conclusions for the surgery of bone transplants the authors consider to be self-evident; bone should be transplanted with the periosteum; if feasible, it should be split lengthwise, so as to insure an intimate union of the endosteum with the surrounding tissues. Bone macroscopically bare of periosteum can, however, be transplanted with good hope of success if care be taken not to scrape away the adherent cells of the osteogenetic layer of the periosteum.

The authors hold that the classical conception of a complete necrosis of the bony portion of the transplant must be modified since, though the majority of the transplanted bone cells necrose, numerous cells can maintain their vitality until the graft has become vascularized. These cells, however, give no evidences of osteogenesis. The process by which the necrotic bone of the transplant is replaced by living bone consists not only in the usual sequence of lacunar absorption and subsequent bone apposition, but in a "creeping replacement." In this process the young bone cells before they have assumed the adult form and before the bone has become lamellar in structure, show evidences of direct cell division, and of power to absorb necrotic bone and form new bone. The living osseous tissue advances into the old by the intercellular deposit of bone, also probably by a direct advance of the young bone cells in the old lacuna.

6. **Ununited Fractures with Study of Bone Repair.**—During the last five years Hawley has observed fifty-three cases of ununited fracture in a total of 1,200 cases of fractures. As a result of this experience, the following conclusions are drawn. Accurate approximation or near approximation, offers the most effective prevention of imperfect union, by lessening the distance to be bridged by capillary growth and bone-cell invasion. Gross hemorrhage interferes with frac-

ture repair, and it is a question whether extensive extravasation is not an indication for evacuation. The periosteum acts to protect the intrinsic process of repair from connective tissue intrusion from without. It also plays a small part, although not always a necessary part, in repair, by reason of its blood supply to the cortex and the bone cells nested around these periosteal capillaries. The promotion of bone regeneration by increasing the amount of calcium in the diet Hawley regards as of doubtful value. During fracture repair the normal demand for calcium is reduced; the only increase is limited to the site of fracture. Whatever influence the organs of internal secretion may have on bone nutrition, the nature of the control is unknown, and there is no evidence that gland feeding favors or retards callus formation.

Hawley urges that simple methods of treating delayed union should precede operative intervention, unless obvious reasons exist for early operation. Bone transplantation is the operation of choice, because buried metal frequently retards the healing process. It is doubtful if the freshening of the fracture surfaces has much merit in itself, for the secondary repair is less likely to be as vigorous as the first. So-called fibrous union may be due to defective vascular communication between fragments, or faulty function of the calcium depositing cells. In Hawley's opinion it is more often the latter. Massage, as it is commonly understood and practiced, Hawley says, should never be used in the treatment of ununited fractures.

12. **New Physical Sign in Lumbar Lesions.**—In various lesions of the lumbar spine, inflammatory and traumatic, Ely found that if the patient be laid on his face, when his knee is flexed his pelvis on that side will rise from the table. The exact reason for this phenomenon is not given, but it helps to differentiate lumbar from sacroiliac lesions, having possibly in the former the same value as Kernig's sign has in the latter.

American Journal of Roentgenology, Detroit

September, I, No. 11, pp. 399-447

15 Roentgen Interpretation of Intestinal Conditions. A. J. Quimby, New York.
16 Chronic Intestinal Stasis—Fluoroscopic and Roentgen Ray Diagnosis in Light of Operative Findings. W. S. Bainbridge, New York.
17 *Treatment of Acute Roentgen Ray Dermatitis. W. J. Dodd, Boston.
18 Diseases of Accessory Sinuses. A. W. George, Boston.

17. Abstracted in The Journal, Oct. 10, 1914, p. 1021.

Annals of Ophthalmology, St. Louis

October, XXIII, No. 4, pp. 605-786

19 Case of Chronic Sporotrichosis of Eye. A. J. Bedell, Albany, New York.
20 Acquired Symmetric Opacities of Cornea of Unusual Type. G. F. Libby, Denver.
21 Blepharochalasis. Report of Two Cases. E. Stieren, Pittsburgh.
22 New Operation for Capsulomuscular Advancement Combined with Partial Resection. S. L. Ziegler, Philadelphia.
23 Trephine Operation for Glaucoma Late Infection from an Acute Conjunctivitis. M. Standish, Boston.
24 Tuberculosis of Bulbar Conjunctiva. G. F. Libby, Denver.
25 Case of Total Coloboma of Optic Nerve Entrances. B. Chance, Philadelphia.
26 Report of Traumatic Paralysis of Both External Recti. F. E. Woodruff, St. Louis.
27 Treatment and Indications for Operation in Glaucoma Simplex. H. S. Gradle, Chicago.

Archives of Pediatrics, New York

November, XXXI, No. 11, pp. 801-880

28 Three Cases of Gonococcus Septicemia with Arthritis Following Scarlet Fever. M. Nicoll, Jr., New York.
29 Pyloric Stenosis in Infancy. Report of Three Cases. M. S. Reuben, New York.
30 University Children's Hospital of Vienna. A. Levinson, Chicago.
31 Case of Hypernephroma. L. Fischer, New York.
32 *Use of Stoeltzner's Casein Calcium Milk in Treatment of Summer Diarrheas of Infancy and Early Childhood. W. L. Rost, New York.

32. **Use of Casein Calcium Milk in Treatment of Summer Diarrhea.**—During the summer of 1914 Rost used this milk in the treatment of fifty-six cases of summer diarrhea, no patient being ill less than three days. Age varied from 3½ months to 2½ years. Many of the children were rachitic, anemic, poorly nourished, underdeveloped and underweight. The original formula was adhered to, as a rule; dextri-maltose was rarely added before the third day; in about 50 per cent. of the cases, cereal decoction was employed instead of water; small amounts were given at four-hour intervals; water *ad libitum* if necessary; the total quantity of food was increased from 2 to 4 ounces daily, depending on the condition and age of the child. It was well taken by all except one. This milk was given for periods of time varying from four days to several weeks. No vomiting occurred. All cases showed improvement in about four days, the stool in most children assuming a yellowish color, semisolid, one or two movements daily. About 40 per cent. gained in weight and 21 per cent. remained stationary; in 30 per cent., the weight could not be observed on account of the very irregular attendance of the mothers.

Rost is convinced that casein calcium milk employed in dyspepsia (summer diarrhea) is productive of results rarely attained with the older methods of treatment. On account of the simplicity of its preparation and inexpensiveness, it is particularly useful in the management of nutritional disturbances applying to the outpatient departments for treatment. It may readily be used in those nutritional disturbances in which Finkelstein and Meyer's protein milk is indicated, but cannot be employed on account of its expense or taste.

Arizona Medical Journal, Phoenix

November, II, No. 10, pp. 7-26

33 Toxic Effects of Certain Drugs on Eyes and Their Clinical Manifestations. D. F. Harbridge, Phoenix.
34 Present Status of Tuberculosis of the Eye. H. H. Stark, El Paso, Tex.

Arkansas State Medical Society Journal, Little Rock

December, XI, No. 7, pp. 155-178

35 Medical Profession and Public Health. W. R. Bathurst, Little Rock.
36 *Epidemic of Small-Pox. F. B. Young, Little Rock.
37 Early Recognition of Diseased Tonsils and Adenoids. W. T. McCurry, Little Rock.

36. **Epidemic of Small-Pox.**—The epidemic Young reports was one of the hemorrhagic and purpuric type which existed in Elm Springs Township, Washington County, Ark., during January and February, 1914. The interesting points in this epidemic are its high percentage of mortality, 90 per cent. of all unvaccinated adults, the recovery of all children afflicted, and the very evident effect that age had on the prognosis of the disease. The younger the child, invariably, the milder the attack. A successful recent vaccination in all cases was an absolute protection. Another point of interest in this epidemic lies in the fact that it came from old Mexico.

Boston Medical and Surgical Journal

December 3, CLXXI, No. 23, pp. 839-878

38 Medical Problems in Education. Responsibility of Medical Profession. T. F. Harrington, Boston.
39 Duty of State to Psychopathic Hospital. W. Channing, Brookline.
40 Progress of Psychopathic Hospital on Prophylactic Side of Mental Hygiene. E. E. Southard, Boston.
41 After-Care Program and Results of Psychopathic Hospital, 1913-14. A. W. Stearns, Boston.
42 Economic Side of Psychopathic Social Service. M. C. Jarrett, Boston.
43 High-Grade Defectives at Psychopathic Hospital During 1913. T. H. Haines, Boston.
44 Genetic Factors in One Hundred Cases of Psychoneurosis. D. Gregg, Boston.
45 Point Scale: New Method for Measuring Mental Capacity. R. M. Yerkes and J. W. Bridges, Boston.

December 10, No. 24, pp. 879-914

46 *Action of Lecithin on Tubercle Bacilli and Their Relation to Experimental Tuberculosis. E. Zueblin and F. Proescher, Baltimore.
47 *Variations in Sensory Threshold for Faradic Stimulation in Psychopathic Subjects. G. P. Grabfield, Boston.
48 *Experience with Lange Colloidal Gold Test in One Hundred and Thirty-Five Cerebrospinal Fluids. H. C. Solomon and H. O. Koefod, Boston.
49 Cases of Symptomatic Psychoses of Cardiorenal Type. F. E. Williams, Boston.

50 Margin of Error in Psychopathic Hospital Diagnosis. E. E. Southard and A. W. Stearns, Boston.
51 *Systematic Control of Salvarsan Therapy Based on Rapidity of Arsenic Excretion. H. M. Adler, Boston.

46. Abstracted in The Journal, July 18, 1914, p. 269.

47. **Variations in Sensory Threshold for Faradic Stimulation.**—The new Martin test (1908 et seq.) for variations in the sensory threshold for faradic stimulation has been used by Grabfield in an orientation study on 135 psychopathic subjects, ranging from the psychoneuroses to cases of coarse brain disorder. Repeated observations have been made in many cases. He found that the faradic threshold in psychopathic subjects of almost all kinds tends to be high, and in fact averages 223 beta units, as against 140. considered to be the highest range of normal subjects under ordinary circumstances, and 175, considered to be definitely pathologic. The average threshold for alcoholic cases was 252, and among alcoholic cases the polyneuritic or Korsakoff cases ran highest. On withdrawal of alcohol and in convalescence the threshold falls, and the method may even have practical value in gauging the degree of progress toward recovery in the delirium tremens group. The paranoidal forms of dementia praecox have a normal threshold, whereas those classed as catatonic and hebephrenic have pathologically high thresholds. The hebephrenic cases tested (two in number) showed some of the highest thresholds calculable (760). Eight catatonic cases averaged 232 (paranoid 131). The manic phase of manic depressive insanity shows a normal threshold, the depressive phase a pathologically high threshold. The psychoneurotics seem to have normal thresholds—hence there may be an immediate practical value diagnostically, when the diagnosis is in doubt as against the frank psychoses.

48. **Experience with Lange Colloidal Gold Test in Cerebrospinal Fluids.**—Solomon and Koefod tested 135 cerebrospinal fluids. The cases of general paralysis give fairly constant and characteristic reactions. The characteristic paretic reaction was typically given in 20 out of 25 cases. As they were not certain in many of the cases whether the diagnosis was paresis or cerebrospinal syphilis, the authors are unable to draw any conclusions from these tests as to the value of the method in differentiating the two. Of twelve cases of congenital syphilis, only one gave a marked reaction and that a case of juvenile paresis. There were 33 cases giving positive Wassermann reactions which were diagnosed as other than syphilis of the central nervous system. Of these, 10, or 30.3 per cent., gave some reaction in the syphilitic zone, mostly very slight. Of 53 cases giving a negative Wassermann reaction and no other indication of syphilis, 18, or 33.9 per cent., gave reactions mostly in the syphilitic zone. The authors maintain that a reaction in the syphilitic zone in cases of syphilitics does not necessarily argue syphilitic involvement of the central nervous system, all other signs being negative. It would seem to offer a differentiation of tuberculous meningitis, and is here at times more valuable than any other test. Four cases of tuberculous meningitis gave reactions not to be confounded with syphilitic disease.

51. **Salvarsan Therapy Based on Rapidity of Arsenic Excretion.**—The determinations made by Adler were 153 in number. The arsenic was found absent in the blood as early as twenty-four hours after intravenous injection. The majority of cases were found to be arsenic-free in from thirty-six to forty-eight hours after salvarsan injection. The longest interval after injection that arsenic was recovered from the blood was sixteen days in one case.

Bulletin of the Medical and Chirurgical Faculty of Maryland, Baltimore

November, VII, No. 5, pp. 63-73

52 Foot and Mouth Disease. J. Ruhräh, Baltimore.

Cleveland Medical Journal

October, XIII, No. 10, pp. 677-756

53 Sympodia. N. W. Ingalls, Cleveland.
54 Pendulous, Pedunculated and Sessile Tubercles and Masses in Serous Cavities in Man. Report of Three Cases. J. H. Hewitt, Cleveland.
55 Flexible Metal Splint Adaptable to Any Angle of Knee or Elbow, F. C. Herrick, Cleveland.
56 Observations Noted in One Hundred Cases of General Paralysis of Insane in Married Men, Their Wives and Children. A. G. Hyde, Cleveland.
57 Research Needs and Clinical Opportunities. N. W. Ingalls, Cleveland.

November, No. 11, pp. 757-836

58 *Fundamentals in Infant Feeding. M. Ladd, Boston.
59 Typhoid in Cleveland in 1913. R. J. Collins and R. G. Perkins, Cleveland.
60 *Proteid Content of Cerebrospinal Fluid. O. P. Bigelow, Cleveland.
61 Elimination of Speech and Voice Defects. B. Cadwallader, Cleveland.
62 Report of Case of Optic Atrophy Following Wood Alcohol Poisoning. S. S. Quittner, Cleveland.

58. **Fundamentals in Infant Feeding.**—That the symptoms of indigestion show the cause, Ladd says, is true to a limited extent only. Fats, proteins and carbohydrates may all produce the same symptom-complex, for the reason that an indigestion caused by any one element, if uncorrected, results in a disturbance in the metabolism of all the elements. The general symptom-complex is vomiting or regurgitation, gas in the stomach or intestines with or without discomfort, failure to gain, or loss in weight, anorexia, fever or subnormal temperature, loose and undigested stools or constipation.

In indigestion due to fat, the vomitus is generally creamy and sour, with a strong odor of butyric acid. The examination of the stools shows fat curds, and soap stools which may be dry and crumbling or like clay. In severe cases they are oily.

In indigestion due to carbohydrates, which generally is associated with fat indigestion, if long continued the vomitus becomes more watery, the stools are acid and scalding, spongy or feathery, and show undigested starch with iodin. In protein indigestion the vomitus is cheesy, the stools contain tough curds. Putrefaction is especially liable to occur in such cases with foul stools and temperature. Mucus is simply a sign of irritation and may occur in the stools in all forms of diarrhea and indigestion. If present in large amounts and associated with continued temperature it generally means an infectious process. The presence of blood, pus and fever invariably indicates infection. Green stools generally represent the severer forms of diarrhea, which may or may not be infectious. They occur in all forms of diarrhea and infections, but the color is not important in the diagnosis of the cause. These points, Ladd states, should be borne in mind in the treatment of these conditions.

60. **Protein Content of Cerebrospinal Fluid.**—An analysis of the results obtained from 440 tests for proteins in the spinal fluid has convinced Bigelow that the determination of proteins alone is not very decisive in diagnosis, unless there is at least a trace of globulin or a large trace of total protein, when a syphilitic or parasyphilitic disease is indicated. Two rather striking points brought out are the large amount of globulin found in cases of paresis, and of albumin in many cases of senile dementia.

Taken in combination with physical signs and the results of other tests, however, Bigelow agrees that the protein estimation has considerable corroborative value. There are, too, certain conditions under which it is especially valuable, due to the fact that in syphilitic and parasyphilitic disease of the central nervous system it is much less subject to variation than are the other pathologic constituents of the cerebrospinal fluid, the cellular increase and complement-fixing substance.

In five cases of convulsive seizures in paresis Bigelow found a marked decrease in the cell counts, in three of them to the normal limit. But the protein does not show a corresponding diminution; there is even an increase, in most cases, which serves as a control from a diagnostic standpoint, on the cellular decrease. It is not very unusual to find a slight yellow tinge in the fluid from cases of paresis, and these yellow fluids always give very marked protein reactions. This color and increase of protein content are both explained by Bigelow to be due to slight hemorrhages on the surface of the brain.

Delaware State Medical Journal, Wilmington

November, V, No. 11, pp. 1-26

63 Carcinoma of Uterus. H. J. Stubbs, Wilmington.
64 Case Resembling Aphthous Fever. W. Linn, Wilmington.

Illinois Medical Journal, Chicago

November, XXVI, No. 5, pp. 487-566

65 Advantages and Disadvantages of Smith's Intracapsular Cataract Operation. W. L. Noble, Chicago.
66 Treatment of Senile Cataract by General Practitioner. W. A. Fisher, Chicago.
67 Indications for Operative Interference in Glaucoma. H. S. Gradle, Chicago.
68 Inheritance with Reference to Eye and Ear. J. C. Fisher, Decatur.
69 Tonsil Removal by Knife Dissection. O. T. Freer, Chicago.
70 Cases of Interdependence of Otolaryngology, Rhinology and Dentistry. J. C. Beck, Chicago.
71 Does Ophthalmic Science in United States Demand an Endowed School of Refraction? J. W. Smith, Bloomington.
72 Function of Faucial Tonsils and Indications for Their Removal. C. F. Burkhardt, Effingham.
73 Topography of Larynx. J. A. Cavanaugh, Chicago.
74 Recognition of Chronically Infected Faucial Tonsils. G. E. Shambaugh, Chicago.
75 Importance of Early Treatment of Strabismus in Infants. W. R. Fringer, Rockford.
76 Prognosis in Squint. T. Faith, Chicago.
77 Duodenal Semistasis, Principal Factor in Auto-Intoxication, Clinical Findings, Etiology and Diagnosis. C. E. Howard, Lewistown.
78 Strongyloides Intestinalis. Report of Case. H. C. Blankmeyer, Springfield.

Journal of Medical Research, Boston

November, XXXI, No. 2, pp. 177-330

79 Reliability of Dogs as Subjects for Experimental Nephritis. H. Dayton, New York.
80 *Pathology of Thrombo-Angeitis Obliterans. L. Buerger, New York.
81 Endotrypanum of Hoffman's Sloth. S. T. Darling, Ancon, C. Z.
82 *Anaphylaxis and Its Relationship to Immunity. F. B. Gurd, Montreal.
83 Study of Growth of Normal Mouse Carcinoma and of Mouse Carcinoma with an Experimentally Decreased Virulence. O. Ishii and L. Loeb, St. Louis.
84 *Experimental Polyneuritis. W. R. Ohler.
85 *Chicken as Possible Typhoid Carrier. O. W. H. Mitchell and G. T. Bloomer, Syracuse, N. Y.
86 Early Aneurysm of Aorta. Report of Case. J. J. Ower, Montreal.
87 *New Medium for Cultivation of Chick Tissues in Vitro with Some Additions to Technic. H. F. Smyth, Philadelphia.
88 *Interrelationship of Dry Pleurisy, Pleurisy with Effusion and Empyema. C. Floyd, Boston.
89 Experimental Arterial Disease in Rabbits. G. P. Denny and C. Frothingham, Jr., Boston.
90 *Nature and Importance of Kidney Lesions in Psychopathic Subjects. E. E. Southard and M. M. Canavan, Boston.
91 Small Kidney, with Special Reference to New Formation of Tubules. E. D. Simpson, Rochester, Minn.
92 *Pathologic Anatomy of Pancreas in Diabetes. R. H. Major, San Francisco.

80. **Pathology of Thrombo-Angeitis Obliterans.**—An acute inflammatory stage according to Buerger is an initial manifestation of the pathology of thrombo-angeitis obliterans. Certain purulent foci are developed, strongly suggesting the presence of some specific toxin, or, more probably, some microbial agent. The destructive influence of these foci is evidenced in their action on the angioblasts, whose true purpose is thwarted, the result being the elaboration of a morphologic complex, distinctive and characteristic for the disease. Just as in tuberculosis and doubtless in Hodgkin's disease, certain well-known structural products represent the specific reaction of the tissues to some organism, so here, too the changes are absolutely typical and diagnostic. Besides these changes, the production of aseptic blood clot plays a part in the development of the occlusive tissue; while the infiltration of the media and adventitia makes for the adhesive fibrosis in the deep vessels, and the distinctly palpable products of periphlebitis in the subcutaneous veins. The change of the acute into the healed connective tissue stage is rapid, a type of occlusion resulting which has for a long time been regarded as due to an "endarteritis obliterans."

82. **Anaphylaxis and Its Relationship to Immunity.**—Experiments were performed by Gurd in the hope of proving the possibility of immediate symptoms of intoxication following the introduction of transferred serum and antigenic protein without an intervening period of time. The fact that it has been possible to induce fatal reactions in this manner indicates that the fixation of receptors is not an essential step in the phenomena of transferred anaphylaxis. These experiments proved a period of incubation is not necessary in order that animals may become passively hypersensitive. The possibility of immediate transferred anaphylactic shock in Gurd's opinion indicates that the theory of parenteral digestion with liberation of toxic split products is the most reasonable explanation of the phenomenon of anaphylaxis.

The blood serum of "immune" animals contains anaphylactizing substances. Unless the immunity or insusceptibility of such animals be due to a purely cellular tolerance or other change, it should be possible to show that the serum of such animals contains substances capable of rendering sensitive animals immune. That this is the case was proved by a series of experiments in which it was shown that by varying the quantity of transferred serum introduced normal animals may be rendered either sensitive or immune. Similar effects of sensitization and immunization can likewise be produced when the transferred serum and the intoxicating dose of antigenic protein are injected simultaneously or immediately following one another. Thus is it proved that cellular fixation or other alteration in the introduced "antibodies" is not an essential feature of these reactions.

84. **Experimental Polyneuritis.**—When fed on an exclusive diet of white bread, whether with or without yeast Ohler noted that fowls develop a definite polyneuritis. When fed on an exclusive diet of whole wheat bread fowls remain perfectly well. To say, then, that any exclusive diet may cause symptoms of polyneuritis is not true to fact. Apparently, there is present in whole wheat bread not present in white bread some substance or substances essential to the health of the organism. In other words, it would seem that in the relation between whole wheat flour and highly milled white flour we are dealing with the same problem as in the relation between unpolished and polished rice. This problem arises, however, only when the diet is restricted and consists almost exclusively of white flour or polished rice, as the case may be.

85. **Chicken as Possible Typhoid Carrier.**—The work done by Mitchell and Bloomer seems to show that the chicken is highly resistant to the typhoid organism. It not only fails to take the disease, but also it cannot be made a carrier either by feeding the organism or by intravenous inoculation.

87. **Cultivation of Chick Tissue in Vitro.**—When combined the medium used by Smyth consists of egg albumin, 25; trypsinized peptone, 0.25; agar agar, 0.75; Ringer's solution, 74.

88. **Interrelationship of Dry Pleurisy, Pleurisy with Effusion and Empyema.**—Acute dry pleurisy, pleurisy with effusion and empyema Floyd claims to be steps in one process. The extent of pleural reaction is controlled by the virulence of the infection and body resistance. When the invading organism is one that excites little chemotaxis, pleurisy with or without an effusion will result, but if chemotactic action is profound and the elaborated toxin not too destructive, empyema results.

90. **Kidney Lesions in Psychopathic Subjects.**—In the series of 100 necropsies reported on by Southard and Canavan, no instance of normal kidneys was found. There were thirty-nine instances of acute renal disease and 11 of these complicated by a background of chronic lesions. There were 35 instances of chronic lesions. Clinically, among 65 cases examined, albuminuria was found in 25 (38 per cent.), and cylindruria in 18 (28 per cent.). The specific gravity went below 1.015 at times in 18 cases (28 per cent.).

Clinically, there were 10 instances of edema, probably either caused or favored by the renal condition (four of the 10 cases showed cardiac disease also). Clinical records show 19 instances of seizures or convulsions of some sort, but it is not clear how many of these can be regarded as renal. Clinical records also indicate that 23 of the 100 cases were regarded in life as more or less severe cardiac cases.

Of the females examined, 26 (or 52 per cent.) had borne one or more children. Thirty-two of the 100 patients were emaciated at death.

The most prominent gross lesion in the series was chronic interstitial nephritis, which occurred in 42 cases. Microscopically, chronic interstitial nephritis was found not only in these 42 cases, but also in 24 other cases (66 per cent.). In 33 cases chronic interstitial nephritis was not only marked in the gross but was the only significant kidney finding microscopically. Plasma cells were never found in such quantity as to suggest acute interstitial nephritis, but were found in 42 per cent. of the series. Thirty-eight of these 42 plasma cell cases showed the plasma cells distributed chiefly about the glomeruli. Eleven cases over 26 but under 50 years of age yielded plasma cells, the same percentage as did the total series. The occurrence of plasma cells in the kidneys of general paretics is worthy of note by reason of their constant occurrence in the brain. Seventeen of 30 paretics in this series showed plasma cells in the kidney (56 per cent.). Sixteen of the 17 paretics showed the plasma cells in the periglomerular region, while one showed them in a subcapsular zone. Seven of the whole series of 30 paretics had seizures; 5 of these seizure cases showed periglomerular plasma cells, one showed no chronic lesion except general fibrosis and one was a case of acute parenchymatous nephritis without chronic lesion. But 3 of these 7 cases showed casts and these only in one-tubule type (descending loop of Henle).

Twelve other non-paretic cases which had seizures or convulsions of various sorts failed to show plasma cells in the kidneys, but in eight instances did show casts, although always confined to a single-tubule type (six times in the descending loop of Henle). Seventy-three cases showed casts in one or more types of tubule; 50 cases in one type of tubule only (forty in the descending loop of Henle); 14 in two-tubule types; 7 in three-tubule types; and 2 in four-tubule types. Sixty-three of these cast-bearing cases showed the casts in the descending loop of Henle. Glomerular tuft changes of a serious nature occurred in 51 cases and there were indications of disease in 13 others (besides two acute lesions). Changes in the glomerular capsule were far less in number, being of a serious nature in but 17 cases (slight or infrequent in 10 others). Cast deposits occurred in 8 cases under 50 years of age without evidence of glomerular change.

92. **Anatomy of Pancreas in Diabetes.**—Fifty-four per cent. of the cases examined by Major showed normal islands of Langerhans. Fibrosis of the islands of Langerhans was present in 46 per cent. of the cases, but no more marked than in non-diabetic cases. In 46 per cent. of the cases there was some hyalin degeneration of the islands of Langerhans. This degeneration in only one case involved a very large number of islands. All of the cases showing hyalin degeneration also presented some fibrosis, and vice versa. The hyalin degeneration in the diabetic series was the most striking lesion present, and was encountered in only one case of the non-diabetic series. This non-diabetic case, however, showed more striking and extensive hyalin degeneration than any of the diabetic series. All the lesions of the islands found in diabetic cases were also encountered, and in some to a more marked degree in non-diabetics.

Kentucky Medical Journal, Bowling Green

November 15, XII, No. 22, pp. 703-736

93 Present Status of Rectal Surgery. G. S. Hanes, Louisville.
94 Nitrous Oxid-Oxygen Anesthesia. W. H. Long, Louisville.
95 Some of the Dangers of Too Greatly Restricted Diet in Typhoid. J. R. Morrison, Louisville.
96 Twilight Sleep. H. A. Davidson, Louisville.
97 *Uterine Myomata and Malignancy. J. G. Gaither, Hopkinsville.
98 Who Should Do Surgery? A. M. Vance, Louisville.

97. Abstracted in The Journal, Oct. 17, 1914, p. 1417.

Lancet-Clinic, Cincinnati

November 28, CXII, No. 22, pp. 575-600

99 Watkins-Wertheim-Duhrssen Operation Against Other Methods in Treatment of Uterine Prolapse. C. T. Souther, Cincinnati.
100 Medical Department in Court. T. W. Blackburn, Omaha.
101 Military Medicine. J. D. Spelman, Cincinnati.
102 Abscess Originating in Pilonidal Sinus. L. J. Krouse, Cincinnati.

December 5, No. 23, pp. 601-626

103 What the Physician Should Expect of Laity and What Laity Should Expect of the Physician. A. D. Willmoth, Louisville, Ky.
104 Tumors of Urinary Bladder. E. O. Smith, Cincinnati.
105 Some Work Seen in Europe Just Before the War. J. Y. Welborn, Evansville, Ind.
106 Korsakoff's Syndrome or Polyneuritic Psychosis. R. Ingram, Cincinnati.

Laryngoscope, St. Louis

November, XXIV, No. 11, pp. 901-961

107 Preturbinal Operation on Maxillary Sinus. R. H. Skillern, Philadelphia.
108 Extracts and Thoughts from Sinus Classic. J. J. Hurley, Boston.
109 Relation of Tonsil to Thyroid Disease. B. R. Shurly, Detroit.
110 Suspension Laryngoscopy in Children. R. Levy, Denver.
111 Routine Use of Bronchoscope in Out-Patient Department. R. F. Ridpath, Philadelphia.
112 Environmental Surgery of Oto-Laryngology.. J. F. Barnhill, Indianapolis.
113 Hyoscin and Morphin as Preliminary to Local Anesthetics. L. M. Hurd, New York.

Medical Record, New York

December 5, LXXXVI, No. 23, pp. 951-992

114 Precancerous Diseases and Precancerous Lesions, Especially in the Breast. J. Ewing, New York.
115 Heredity and Predisposition in Life Insurance. A. B. Wright, Hartford, Conn.
116 Chronic Prostatitis and Its Treatment by General Practitioner. W. J. Robinson, New York.
117 Question of Intestinal Stasis. W. L. Barber, Jr., Waterbury, Conn.
118 Twilight Sleep in Practice. W. H. W. Knipe, New York.
119 "Back to the Soil." J. North, Toledo, O.
120 New Combined Head-Mirror and Face-Protector. M. Unger, New York.

December 12, No. 24, pp. 993-1034

121 Management of Pneumonia. S. Baruch, New York.
122 *Progressive Lenticular Degeneration. Report of Case. C. E. Nammack, New York.
123 *Dystonia Musculorum Deformans. Report of Case. H. Climenko, New York.
124 Extrapyramidal Hemiplegia. Report of Case. A. Gordon, Philadelphia.
125 Case of Compression Fracture of Upper Extremity of Tibia. A. C. Burnham, New York.
126 Diathermic Treatment. A. D. Rockwell, Flushing.
127 Case of Herpes Buccalis Recidivus of Fournier-Emery Type. D. W. Montgomery, San Francisco.
128 Two Cases of Retropharyngeal Abscess. B. A. Fedde, Brooklyn.

122. **Progressive Lenticular Degeneration.**—Nammack's patient was a male, the last of seven children. The family history was negative as to gout, rheumatism, syphilis, alcoholism or nervous affections. He had the usual diseases of childhood and at the age of 5 years he lost his speech and the power of walking, being obliged to creep around, but he was able to go to school at the age of 10, and left six years later in the fourth grade. He was always near the head of his class and liked to study. He had a bad temper and would get into quarrels with the other boys. He left school because his left arm began to shake so that he could not hold objects in it. After he left school he remained at home.

The first symptom of the disease occurred when he was 6 years old, when it was noticed that his left hand trembled considerably and that his right leg slowly turned in. The foot finally got into such a condition that he walked on the side of the foot and had to catch hold of bed-posts, etc., to support himself. There was no history of epileptic fits or periods of unconsciousness. Gradually, the tremor of the hand became more aggravated, the condition of the foot became worse and his speech became so nasal in quality that it was difficult to understand him. When he started to do anything he had to wait a few minutes and then quickly arose; as soon as he got up he would start swaying around and would have to take hold of some support to pull himself along. If he was in the open, without support, he would throw himself forward and drag or slide his feet. After he started walking he got along very well unless he stopped. The muscles of the arm and trunk were remarkably well developed.

The patient's facial expression was fixed; the mouth was large and drawn, and when walking or doing any form of exercise he protruded his tongue. He understood everything that was said to him and usually was in a jolly mood, although he had a bad temper. His intelligence was about on a par with that of a boy of 12 or 13. He was able to dress and to feed himself; only it took him longer. His condition had apparently remained unchanged for several months. Swallowing was normal. The tremor of the hand was coarse. The grip was good; the knee and ankle jerks were exaggerated; sensations appeared to be normal. The Wassermann test was negative. There was atrophy of the muscles of the right leg, hip and calf, with compensatory hypertrophy of the other muscles of the body.

123. **Dystonia Musculorum Progressiva.**—The subject of the case cited by Climenko was a girl 11 years old of Jewish parentage, the third child, born at full term after a perfectly normal labor. She was breast fed and began to walk and talk at about the age of 18 months. The bowels had always been irregular; her appetite was poor and she was frequently restless in her sleep. She played a good deal out of doors and was considered bright at school. When she was 9½ years of age she had an attack of whooping-cough. About a week or two after the attack she began to complain of weakness in her left lower leg. A little later the foot turned outward while running or walking quickly. The weakness gradually extended upward, and her knee gave way. Plaster-of-Paris applied to the knee joint seemed to relieve her a good deal. A few weeks later she began to complain of weakness in the opposite leg, and soon the left hand became involved, and with each attempt to use the hand it began to tremble. Similar tremors were also noticed in the lower extremities. She complained of no pain or paresthesias of any kind. The condition progressed steadily, and about a year after the onset of her symptoms she was no longer able to walk.

In the recumbent posture the patient showed a slight wormlike tremor of all the extremities, more pronounced on the right side. It somewhat resembled an athetosis but possessed a characteristic of its own, being somewhat irregular and worm-like and entirely lacking in rhythm. In the prone position there seemed to be a characteristic pose consisting of flexion of the right knee, with extension and external rotation of the right hip, and outward rotation of the left foot. There was a slight kyphosis in the lumbar region which became more pronounced in the sitting posture. On standing, a kyphoscoliosis was equally pronounced. The trunk assumed an acute angle, the pelvis varying in its position with movement. The patient could stand only with support. On standing, the right foot was at an unusual angle with the lower leg, the right knee assuming almost the shape of a genu recurvatum. The patient was unable to walk unsupported, a marked feature being a peculiar torsion of the trunk on the pelvis, the latter being thrown out of a normal angle relation with the trunk. On trying to walk there were numerous unskilful and disharmonious movements through extremities and trunk; to correct these movements, the patient seized her lower extremity at the joint, forcing it into proper position. The right hamstring and leg muscles were in a state of hypertonicity; almost rigidity. Both quadriceps groups and the left peroneal group were in a state of complete atonia. The hips were hyperflexed on the abdomen. Due to the atony of the flexors digitorum of the right hand, the fingers could be hyperflexed to such a degree that on dorsal flexion (really extension) of the fingers, they could be brought to an acute angle with the dorsum of the hand.

Both knee jerks were diminished, and the ankle jerks were obtained with difficulty. The Babinski andOppenheim signs were absent. The abdominal reflexes were present. All the various sensibilities were intact. The cranial nerves were normal. The heart, lungs and abdominal viscera showed no abnormality. The patient was able to write with difficulty. The electric reactions showed no qualitative changes, a hyperexcitability, however, was obtained in the hypertonic muscles. The urine showed a slight excess of indican, but was otherwise negative. The psyche was perfect. The roentgenogram showed that the neck of the left femur was shorter and thicker than the right and the sacrum was turned to the left. There was no change in the density of the bone.

Modern Hospital, St. Louis

December, III, No. 6, pp. 351-408

129 Relationship of Poverty and Sickness and of Both to Hospital. S. M. Johnson, London.
130 Feeding the Hospital—The Food. L. Graves, Cleveland.
131 Need of Better Hospital Equipment for Medical Men. E. F. Stevens, Boston.
132 How an Average Community Cares for Its Sick. J. R. Shilliday, New York.
133 Grouping of Medical Men for Office and Hospital Practice. P. E. Truesdale and R. W. French, Fall River, Mass.
134 New Era for General Memorial Hospital. A. M. Lawson.

New Mexico Medical Journal, Las Cruces

November, XIII, No. 2, pp. 41-82

135 Intussusception in Children. J. Vance, El Paso, Tex.
136 Cases with Erroneous Surgical Diagnosis. H. R. McGraw, Denver.
137 Abdominal Diagnosis with Special Reference to Pain. W. R. Lockett, Carthage.

December, No. 3, pp. 83-114

138 Observations of Country Physician. J. W. Laws, Lincoln.
139 Infection with Ceromona Hominis. E. C. Prentiss, El Paso, Tex.
140 Proper Treatment of New Growths. W. W. Waite, El Paso, Tex.

New York Medical Journal

December 12, C, No. 24, pp. 1145-1192

141 Abnormal Mental States. H. M. Friedman, New York.
142 Changing Tendencies in Disease. J. R. Wiseman, Syracuse.
143 *Treatment of Pectus Excavatum (Funnel Breast). J. M. Taylor, Philadelphia.
144 *Radium and Mesothorium in Conjunction with Roentgen Therapy. R. H. Boggs, Pittsburgh.
145 Some New Potentialities Associated with Electric Energies. T. D. Crothers, Hartford, Conn.
146 *Hemiplegia Complicating Thoracic Aneurysm. L. N. Boston and L. C. Rummage, Philadelphia.
147 Colon Bacillus Infection in Middle Ear Disease. D. S. Dougherty, New York.
148 Puerperal Sepsis. J. N. Upshur, Richmond, Va.
149 Pneumococcus Peritonitis. L. M. Kahn, New York.

143. **Treatment of Pectus Excavatum (Funnel Breast).**—The plan adopted by Taylor is to force the chest to expand and the ribs to rise to a normal level; and to do so often enough to overcome the rigidities, and allow the posterior muscles of the back and shoulder girdle to attain sufficient strength to maintain the heretofore dropped and collapsed chest in a normal position. He directs the patient to clasp hands behind and place them just below the shoulder blades, then to pull apart one against the other, extending both steadily downward, as far as possible, maintaining both traction and extension with increasing force, and to hold them at the end of full downward extension an appreciable time—a few seconds.

As an important detail, first the right hand clasps the metacarpal bones of the left hand, the fingers of the left hand remaining extended. The thumb of the clasping hand is *not* used; encircling the left hand twists the right and impairs the direction of pull. The movements are repeated, using alternate hands, one to clasp and one to extend; both being thrust down and pulled apart; also holding the back vertical, namely, not protruding the belly. It is sufficient to make ten extensions at a time—five with each hand—and daily at least for two or three months; then two or three times a week.

144. Abstracted in The Journal, Oct. 10, 1914, p. 1321.

146. **Hemiplegia and Aneurysm.**—Sixty days before Boston and Rummage saw this case, a man, 41 years of age, the patient while working was seized by an attack of severe pain immediately beneath the sternum, which preceded syncope. The pain subsided in approximately one-half hour, but following the disappearance of the pain, the patient noticed that he was unable to speak in his usual tone of voice. From the date of this attack his power of speech gradually lessened until aphonia supervened. Following the attack of syncope, previously cited, the patient experienced vague pains in the right arm and right leg. Hand in hand with the foregoing annoyances, there developed a harsh,

rasping paroxysmal cough, accompanied by profuse serous expectoration. Dyspnea was a conspicuous feature following the attack of syncope and progressed from bad to worse.

Three days before admission to the hospital, the patient, while sitting, was seized with an attack of vertigo and fell to the floor; consciousness was not lost. Until his admission and throughout his stay in the hospital, the patient displayed total inability to move the right arm, right leg, or right side of the face, features shown post mortem to be caused by cerebral embolism. The right half of the chest appeared to expand somewhat more than did the left during inspiration. The neck became markedly distended during paroxysmal attacks of coughing, and at such times there was an appreciable increase in the size of the veins of both the neck and upper portion of the thorax. There was incontinence of both urine and feces. Tracheal tugging was obtained.

The patient displayed arterial atheroma. The systolic blood-pressure remained around 160 mm. of mercury; diastolic 100 mm. Corresponding to the upper segment of the sternum was an area where the percussion note was appreciably impaired, and this area was imperfectly circular in outline, with a diameter of approximately 2 inches; at no time was there any undue evidence of pulsation or thrill over this dull area. A bruit was not audible over the side of the aneurysm.

Necropsy report: At the beginning of the transverse arch of the aorta was found an aneurysm about the size of an orange. This aneurysmal sac involved both the beginning of the innominate artery and a portion of the aorta beyond that point where the (innominate artery) blood supply to the right arm is given off. The aneurysm was fully two-thirds filled with well organized clot. A portion of the clot occupied the anterior surface of the aneurysmal sac, a pathologic feature which doubtless explains why abnormal pulsation was not detected in the sternal notch, and also why a bruit was not audible over the aneurysm.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

November, XIX, No. 5, pp. 165-233

150 Diagnosis and Prognostic Values in Renal Conditions. L. B. Wiggs, Richmond.
151 Treatment of Psychoneurotic Patients. T. A. Williams, Washington, D. C.
152 Addison's Disease. D. Vanderhoof, Richmond.
153 Traumatic Rupture of Spleen, Operation with Recovery. B. C. Willis, Richmond.
154 Syphilitic Facial Paralysis. S. B. Cary, Richmond.

Philippine Journal of Science, Manila

August, IX, No. 4, pp. 307-380

155 Pipette Method in Isolation of Single Micro-Organisms and in Inoculation of Substances into Living Cells. M. A. Barber, Manila.
156 Diagnosis of Asiatic Cholera at Necropsy. B. C. Crowell, Manila.
157 Typhoid in Philippines. P. Gutierrez.

Texas State Journal of Medicine, Fort Worth

November, X, No. 7, pp. 255-302

158 Cesarean Section. S. M. D. Clark, New Orleans.
159 Id. W. L. Crosthwait, Waco.
160 Cesarean Section in Treatment of Eclampsia. M. B. Stokes, Houston.
161 Case of Extra-Uterine Pregnancy. J. Gilbert, Austin.
162 Experiences and Results with Wassermann Test. L. J. Spivak, Victoria.
163 Luetin as an Aid in Diagnosis of Syphilis. J. H. Black, Dallas.
164 Multiple Sarcomatosis of Brain and Spinal Cord. H. Hartman, Galveston.
165 Some of the Newer Operations for Glaucoma. J. O. McReynolds, Dallas.
166 Etiology of Glaucoma. J. H. Burleson, San Antonio.
167 Case of Lateral Sinus Thrombosis. W. D. Jones, Dallas.
168 Ocular Palsies: Etiology and Treatment. L. H. Lanier, Texarkana.
169 Bronchoscopy with Tracheotomy. R. H. T. Mann, Texarkana.

Vermont Medical Monthly, Burlington

November, XX, No. 11, pp. 527-540

170 Fractures of Spine and Pelvis. F. J. Cotton, Boston.
171 Double Extra-Uterine Pregnancy with Rupture of One Tube. G. M. Sabin, Burlington.
172 Dangerous and Non-Dangerous Disturbances of Heart. O. C. Baker, Brandon.

Washington Medical Annals

November, XIII, No. 6, pp. 335-381

173 Sanitation in Ancient Civilizations. D. S. Lamb, Washington, D. C.
174 Goldberger Diet in Pellagra. Report of Case. W. M. Barton, Washington, D. C.
175 Foreign Body Removed from Urinary Bladder. L. Eliot, Washington, D. C.

West Virginia Medical Journal, Wheeling

December, IX, No. 6, pp. 181-216

176 Treatment of Fractures of Long Bones. J. W. McDonald, Fairmont.
177 Small-Pox—Diagnosis and Sanitary Control. S. L. Jepson, Wheeling.
178 Use of Pituitrin in Obstetrics. H. G. Tonkin, Martinsburg.
179 Principles of Criminal Anthropology. A. MacDonald, Washington, D. C.
180 *Report of Five Cases of Dementia Praecox Treated by Nuclein Solution (Lundvall's Formula). H. W. Keatley and R. M. Bobbitt, Huntington.
181 Sanitary Control of Water-Ways. S. C. Highland, Clarksburg.

180. **Dementia Praecox Treated by Nuclein Solution.**—The patients treated by Keatley and Bobbitt were given calomel and laxative salines and a leukocyte count made. They were then started on intramuscular injections of nuclein solution. The formula used was that modified by Lundvall. They began with a dose of 1 c.c. and gradually increased it during the first two and one-half months to 10 c.c. and then increased or diminished it according to the reaction of the patient. The solution was injected deep into the muscles, using aseptic precautions. The reaction obtained was not as severe as spoken of by other authors. Only one patient had a chill after receiving 11 c.c.

There was no febrile reaction on the administration of less than 3 c.c. The reaction obtained on doses over this amount were distinct but not severe, the temperature rising from 99 to 101 F., the pulse rate being moderately increased and a feeling of malaise occurred in some cases. The first marked hyperleukocytosis occurred after the injection of 5 c.c. of the solution. The hyperleukocytosis ranged from 11,000 to 15,000 a few hours after administration of the nuclein, the count in one case being as high as 17,500. The polymorphonuclear neutrophils were found to be relatively increased. There was never any local reaction. There was an absolute lack of mental improvement in four of these cases. One case showed some temporary improvement which lasted only a short while. The administration of nuclein was discontinued because of the persistent loss of weight, with failing health and lack of mental improvement.

Wisconsin Medical Journal, Milwaukee

November, XIII, No. 6, pp. 217-256

182 Diagnosis of Joint Diseases. A. R. Colvin, St. Paul, Minn.
183 Treatment and Indications for Operation in Glaucoma Simplex. H. S. Gradle, Chicago.
184 Medical Legislation. A. C. Umbreit, Milwaukee.
185 Existing Laws and Legislation Needed in Constructive Care of Poor and Mentally Irresponsible. K. L. Van Wyck, Milwaukee.
186 Clinical Tour Through Europe. E. Evans, La Crosse.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Medical Gazette, Calcutta

November, XLIX, No. 11, pp. 417-456

1 Asylum Dysentery. P. Heffernan.
2 Construction and Administration of Central Asylums in India. W. S. J. Shaw.
3 Two Cases of Hysteria in Males. P. Heffernan.
4 Two Cases of Anergic Stupor Treated with Thyroid Gland Extract. B. S. Bhiday.
5 Treatment of Earlier Stages of Senile Cataract. H. Smith.
6 Prevention and Treatment of Septic Wounds in Warfare. F. W. Sumner.

Journal of Tropical Medicine and Hygiene, London

November 16, XVII, No. 22, pp. 337-352

7 Dracontiasis or Dracunculosis. R. E. McConnell.

Lancet, London

December 5, II, No. 4762, pp. 1287-1342

8 *Modern Aspects of Certain Problems in Pathology of Mental Disorders. Treatment with Thyroid. E. Goodall.
9 *Case of Leprosy Treated Successfully with Radium and Diathermy. C. E. Iredell.
10 Cases of Anomalous Fever. S. Taylor.
11 *Glycerin in Bromidrosis. T. H. C. Benians.

8. **Thyroid Extract in Certain Mental Disorders.**—For many years Goodall has employed thyroid extract in cases of stupor and stupor with melancholia, or of confusional insanity—cases which have certain features in common with myxodematous cases, but until the last two years the failures were more numerous than the successes. He attributes many of those failures to the circumstance that he gave insufficient doses of thyroid. His recent experience entirely justifies those who have insisted on large doses if any benefit is to follow. Thyroid is not only beneficial in acute stupor, or acute dementia, and "confusional" states, but also at a later stage of these conditions and of cases of recent melancholia, when the patient has improved to a certain point and there remained. In these cases administration of thyroid has appeared to complete the process of recovery.

Eleven patients suffering from such mental disorders were treated by this method. These patients were kept in bed during the whole course of treatment, usually in the open air, on liberal diet; and the temperature, pulse, and respiration were taken throughout twice daily. All had been mentally ill for months before the thyroid treatment was started. The amount of thyroid given varied from 25 to 50 grains a day for five to eight weeks. The pulse-rate was affected in the direction of increase very consistently, whereas the temperature and respiration were affected but slightly, or not at all. Gain of weight during the treatment occurred in two of eleven cases; one showed no change; in all the others a loss was noted, but after cessation of treatment weight was rapidly regained, and in eight instances there was ultimately a gain on the original weight. The results were highly satisfactory, since no less than six patients of eleven became well; and all the others, except one, showed a definite improvement, and this one had been deranged for no less than three years when treatment was employed.

In eleven out of twelve cases of epileptic insanity treated with thyroid the number of fits was reduced. The patients were not on any other drug, but were kept in bed on ordinary diet with, in some cases, extras, such as milk and egg. A reduction of weight occurred in all except one. The observation as to the pulse, respiration, and temperature made in connection with the first series of cases apply also to this series. On the basis of these results Goodall kept certain of these patients on 5 grains of thyroid daily for a prolonged period; the patients were up as usual and on their usual diet. A substantial reduction in the number of fits occurred in many of these cases, amounting in some to from 52 per cent. to 65 per cent., as a result of a small daily dose of thyroid. No ill-effects were observed.

9. **Case of Leprosy Treated with Radium and Diathermy.**—Three facts are specially worthy of note in Iredell's case of maculo-anesthetic leprosy: (1) that the patient is better in all respects than he was six months ago; (2) that his improvement began when diathermy was started, and (3) that he felt better directly after each treatment. The disease in his case has been characterized by (a) macula, (b) two lepromes, (c) neuritic affections, and (d) intestinal trouble. (a) These were the symptoms of the first stage of the disease and passed off before treatment was begun. (b) A leprome on the cheek disappeared spontaneously; that on the lip was not treated with diathermy, and therefore it cannot be said what the effect of diathermy would have been, but it certainly seemed to respond at once to radium treatment. (c) The effect of diathermy on the patient's ulnar nerve was remarkable. For some time he had been in the habit of putting his arm in a hot bath in order to ease the pain. After holding two electrodes in his hands for twenty minutes the pain in the arm was far more relieved than it had been by the hot baths, and he found that he was able to move the little finger better than he did before. Some twinges of the left external peroneal nerve cleared with one application. (d) No less striking than the effect of the treatment on the nerves was the effect on the abdominal trouble. While the treatment was in progress peristalsis was distinctly perceptible to the patient, and in the course of the twenty-four hours following, very copious evacuation occurred, although no drug was used. This in marked contrast to what had happened in the first three attacks, when it was found necessary to use aperients. Since April, when the treatment started, he has had five treatments at intervals of a few weeks, and on two occasions he had treatment daily with corresponding benefit.

11. **Glycerin in Bromidrosis.**—Of five cases treated by Benians three were of a mild type associated with the warm weather. These were completely relieved while the treatment lasted, but relapsed when it was discontinued. The other two cases were of a severe type. The condition had persisted for some months in spite of energetic measures taken to insure cleanliness, and despite the continued application of drying and disinfectant powders. In both of these two latter cases there were blisters and abrasions, and in both cases the condition was completely cured in the course of three days by the application of glycerin well spread over the soles and toes before the socks were put on, this being repeated each morning as long as was necessary (three times in both cases).

Practitioner, London

December, XCIII, No. 6, pp. 733-872

12 Injection Treatment for Hemorrhoids. J. F. Goodhart.
13 Ointments—Their Therapeutic Value and Their Abuse. J. Galloway.
14 Symptoms and Diagnosis of Stone in Urinary Tract. P. J. Freyer.
15 Venereal Diseases as We See Them To-Day. J. E. R. McDonagh.
16 Diagnosis of Obscure Cases of Carcinoma. W. E. Wynter.
17 *Legally Established Case of Traumatic Carcinoma of Breast. W. S. Handley.
18 Pneumothorax Treatment of Phthisis. C. Riviere.
19 War Diseases; Typhus Fever, Enteric Fever, Dysentery and Cholera. G. S. Bigg.
20 Phenol in Treatment of Tetanus. Report of Case. A. A. Pim.
21 Urticaria Papulosa. H. W. Barber.
22 Lung Affections in Influenza. D. T. Richards.
23 Longevity of Eminent Medical Men. H. Drinkwater.

17. **Case of Traumatic Carcinoma of Breast.**—The following case is of interest, for it is the first in which the doctrine of traumatic carcinoma has been accepted in the English high courts. A woman consulted Handley on March 26, 1912. She stated that on Nov. 3, 1911, she fell over a beam, where building operations were in progress, landing on the left elbow and the left breast. The arm had to be kept in a sling for three weeks, and subsequently its movements were stiff. About Jan. 1, 1912, she first noticed a discharge from the left nipple, and shortly afterward a small lump was noticed in the left breast. Ever since the accident her general health has been impaired. On examination Handley found the upper half of the left breast occupied by a large and advanced malignant tumor, extensively adherent to the overlying skin. The tumor appeared to be a rapidly-growing one. It was removed by him April, 1912. Examination of the growth showed it to be a rapidly growing duct-carcinoma, evidently of multifocal origin, for it mapped out accurately the anatomic limits of the group of lobes forming the upper hemisphere of the breast.

Bulletin de l'Académie de Médecine, Paris

November 17, LXXII, No. 36, pp. 259-268

24 *Relations between Meteorologic Conditions and Air-Borne Epidemic Disease. A. Trillat.
25 *Morphin for Painless Delivery. (Sur l'emploi de la morphine comme analgésique.) G. Bertrand.
26 *Medicated Gauze for Dressing Wounds in War. (La gaze au trioxyméthylène.) Pauchet and Sourdat.

24. **The Weather and Air-Borne Infectious Disease.**—Trillat has been studying epidemics in connection with meteorologic conditions and has found that the faculty possessed by micro-organisms of serving as a nucleus for

condensation of moisture is an important factor in the spread of infection. When numbers of micro-organisms thus serve as surfaces for condensation of moisture, they form a moist dust which obeys physical laws quite different from those which govern dry dust. The size of these microbian droplets and the time required for them to settle down in quiet air are dependent on the size of the germs, and gravity aids in sifting out certain ones from the crowd of droplets. When smaller than a micron in diameter they escape the action of gravity and obey only the laws of thermodynamics, being swept along and separated by air currents and attracted instantaneously to a cold region or surface. The attraction of the cold area or surface is felt and yielded to even against a current of air.

Microbes thus suspended in droplets in the air are extremely sensitive to favoring or antiseptic influences. The gases of respiration or of vegetable or animal decomposition transform each of the droplets into actual microscopic culture media. In certain circumstances a volume of humid and sterile air can be inoculated throughout by the introduction of such microbian droplets. The connection between epidemics and meteorologic conditions, wind, heat, low atmospheric pressure, electric conditions, etc., is thus evident. The microbian droplets can be carried for considerable distances by the wind and then, under the influence of sudden cold, be instantaneously localized in a region, without losing their biologic properties. The fact that this can occur also against the prevailing wind explains the capricious course of certain extensive epidemics of disease transmissible by the air. Other causes may cooperate in the assembling and sifting out of the microbes, especially whirling eddies of air. The action of electricity is complex. In the formation of ozone it exerts an antiseptic action, while, on the other hand, the ionization of the air promotes the condensation of moisture and the formation of droplets. Low barometric pressure permits the escape of gases stored in the soil and elsewhere and these facilitate condensation and multiplication of pathogenic germs. He suggests that this may be one factor in making a soil a tetanus-breeder.

25. **Morphin for Painless Delivery.**—For editorial comment see The Journal, Dec. 19, 1914, p. 2233.

26. **Trioxymethylene Gauze for Wounds in War.**—Pauchet and Sourdat have found that the best of all dressings for the wounded soldiers is gauze impregnated with paraformaldehyd. It is not only aseptic but it sterilizes and fastens the tissues with which it comes in contact, and the wound seems to dry up without oozing or suppuration. There is no need for asepsis in preparing the gauze. It is placed in a tin box or other covered vessel and a few tablets of trioxymethylene (paraformaldehyd) are placed in the bottom of the box and it is then set near a stove or radiator (about 50 C.) for an hour. In case of a seton wound, they cut the bridge of tissue and pack the groove with this medicated gauze with a dry dressing over it. Wicks of the medicated gauze are introduced into the depths of the tissues in case of a compound fracture, leaving the splinters of bone and the tissues unmolested as much as possible. The effect is a kind of embalming and with the limb thus treated, and splinted the wounded man can stand a long journey. Even after amputation for gas gangrene, treating the stump with this medicated gauze facilitates rapid healing. It should never be applied after tincture of iodin as it is liable to prove irritating, but under other conditions, they have found it incomparably better than any other method at their command for dressing wounds in war. The dressing does not have to be renewed generally until the fifth day.

Archiv für Gynaekologie, Berlin

CIII, No. 2, pp. 243-394. Last indexed Aug. 29, p. 811

27 *Necrosis of Cortex of Both Kidneys in Eclampsia. (Fall von doppelseitiger, totaler Nierenrindennekrose bei Eklampsie, nebst kurzem Abriss über den derzeitigen Stand der Eklampsiefrage.) A. Schüppel.
28 *Leukemia in a Pregnant Woman. (Leukämie in der Schwangerschaft.) A. Petersen.
29 Spontaneous Separation of Left Fallopian Tube. (Spontantrennung der Tube und Verlagerung der Adnexe.) M. Ogorek.
30 *Anesthesia in Gynecology. III and IV. (Stickoxydulnarkosen; Lumbalanästhesie.) H. Schlimpert.
31 *Physiologic Occurrence of Arsenic in Human Organs, Especially in Women. V. Frommer.
32 *Puerperal Tetanus. R. Spiegel.

27. **Eclampsia.**—Schüppel describes a case of total necrosis of the cortex of both kidneys found at necropsy of a woman of 35 who had succumbed to puerperal eclampsia. The findings indicated that eclampsia may be the result of excessive destruction of the formed elements of the blood from injury of the liver or kidney during the pregnancy, thus checking the normal elimination of the waste products of the placenta. The wreckage of the formed elements thus destroyed in excessive amounts blocks the finer vessels, and the shape and size of the vessels in the kidney cortex render this a particularly serious matter here, the circulation through the whole cortex thus being soon shut off completely. Any therapeutic measure, even decapsulation of the kidney, would be entirely useless in such a case.

28. **Leukemia in a Pregnant Woman.**—Petersen recalls that Hermann in 1901, commenting on eight cases he had compiled, remarked that the enlargement of the spleen and liver in leukemia causes greater disturbance of course when the uterus is distended, so that the symptoms from leukemia are more severe in the pregnant. Abortion is also more common, but if the patient survives the abortion or miscarriage the condition materially improves thereafter. French in 1908 reiterated that the prognosis in leukemia is far graver in the pregnant than in the non-pregnant. He knew of seven cases on record, and Petersen states that no instance was known among the 22,000 obstetric cases at the Breslau Provincial Maternity until recently a woman of 24, nearly at term, was sent there in a serious collapsed condition with the presumptive diagnosis of leukemia. The spleen was not much enlarged and the blood did not show the characteristics of either leukemia or pernicious anemia. But necropsy revealed the changes in the organs typical of myeloid leukemia, and apparently confirmed the assumption that the leukemia had developed at the fifth or sixth month of the pregnancy. This was the case likewise in Greene and in Hilbert's cases, and the fatal collapse following spontaneous delivery was duplicated in these cases and also in one reported by Laubenburg in 1891. Petersen advises immediate interruption of the pregnancy as the only possible treatment when a woman known to be leukemic becomes pregnant, as also when leukemia develops in a pregnant woman. The earlier it is done the better. The child seemed healthy, showing no signs of leukemia at the time or since. Saenger and Cameron have also reported similar experiences showing that the child of a leukemic mother is not necessarily itself leukemic.

30. **Anesthesia in Gynecology.**—In this third part of his article Schlimpert describes his study of general anesthesia from nitrous oxid, comparing the various technics in vogue alone or combined with other anesthetics. Until recently it has had very little vogue in countries other than the English-speaking, but lately has been taken up with new interest in other lands. His extensive experience with lumbar anesthesia has convinced him that even with the most painstaking technic we must reckon with a certain proportion of refractory cases and a certain number of cases with persisting after-headache.

31. **Arsenic in Human Organs.**—Frommer has been investigating to learn what becomes of the arsenic entering the body in the food and normally eliminated in the urine and menstrual discharge. During pregnancy this elimination is impeded, and his theoretic assumption that arsenic is thus retained during pregnancy was confirmed by his research on rabbits, human fetuses and the organs from pregnant cadavers, including two cases of eclampsia, and in some male cadavers. The organs of one young man who had succumbed to Banti's disease showed quite a large proportion of arsenic. It was positively known that he had taken no arsenic during eight months at least before his death. In all the organs examined arsenic was found in amounts

ranging from traces to considerable proportions (*starker Arsenspiegel*). The effect of so much arsenic on the physiologic processes must not be disregarded any more than its importance from the medicolegal standpoint.

32. **Puerperal Tetanus.**—Spiegel adds four cases from his own practice to the sixty-two he has found in the literature in which tetanus developed soon after an abortion or birth of a child. In only one of his cases was the correct diagnosis made at once. He tabulates the details of the entire list and comments that early diagnosis and intravenous and intraspinal injection of antitetanus serum are the main reliance, clearing out the focus by rinsing and curetting the uterus. For this 70 per cent. alcohol seems to give the best results, as the tetanus toxin is precipitated by alcohol, and the spores deprived of their toxin are less dangerous. He advises tamponing the uterus with antitetanus serum, renewing the tampons each day; if the cervix is not dilated, daily rinsing with alcohol may suffice. Of all symptomatic measures to arrest the spasms, intraspinal injections of 5 or 10 c.c. of a 15 per cent. solution of magnesium sulphate seem to be most effectual. The patient's strength must be kept up with nourishing food. The conditions in the puerperal uterus favor absorption so that the incubation phase is comparatively short.

Beiträge zur Klinik der Tuberkulose, Würzburg

July 30, XXXII, No. 1, pp. 1-146. Last indexed Nov. 28, p. 1987

33 *Sensitization Index with the Tuberculin Skin Reaction. (Die Pirquetsche Kutanreaktion und die Bedeutung der Sensibilisierung bei derselben.) W. Frehn.
34 Diagnosis of Tuberculous Bronchial Glands in Children. E. Rach.
35 What Experimental Medicine Has Contributed to the Progress of Our Knowledge in Regard to Tuberculosis. F. Hamburger.
36 Skeletal Factors Contributing to Apical Disease. (Röntgenologische Studien über die Beziehungen zwischen Rippenknorpelverknöcherung und Lungentuberkulose.) F. Kaiser.
37 Ionized Air and Local Application of Electricity in Treatment of Tuberculosis. T. Brinck.
38 Rosenbach's Tuberculin in Treatment of Pulmonary Tuberculosis. M. Büschel.
39 Febrile Reaction and Hemoptysis after Diagnostic Injection of Tuberculin. (Fall von Tuberkulinschädigung bei der diagnostischen Anwendung des Tuberkulins.) Brösamlen.

33. **Improved and Uniform Technic for the Skin Tuberculin Reaction.**—Frehn emphasizes that the skin responds differently to the tuberculin test in different regions, and that it is important to choose the point responding most sensitively to the test and keep to this one point. Otherwise the reactions cannot be compared. The conditions in regard to the skin itself and the local blood and lymph circulation seem to be most favorable in the chest. He thinks that far more instructive findings than those hitherto obtained can be realized by testing to what extent the organism can be sensitized by the Pirquet skin test applied with 50 per cent. tuberculin. The test is then repeated with 5 per cent. tuberculin and again, exactly eight days later, the test is made again with the 5 per cent. tuberculin. He applies the test on both sides of the sternum each time and takes the average between the size of the two papules in square mm. As a rule, the second and third local reactions are much more pronounced when the resisting powers of the organism are at par or above. The reaction grows less and less pronounced the more seriously the organism is diseased. This double inoculation method, based on the sensitization which occurs in the vigorous from the first inoculation, seems to promise much greater accuracy and more instructive findings than with the ordinary technic. Frehn tabulates the findings in 33 clinically healthy, 94 per cent. demonstrating marked sensitization; in 36 patients in the first stage of tuberculosis, with evidence of sensitization in 71 per cent.; in 30 in the second stage, 43 per cent., and in 39 in the third stage with only 28 per cent. sensitized. The index is the quotient of the size of the papules from inoculation with the 5 per cent. tuberculin. All the clinically healthy persons tested had been in more or less contact with tuberculosis, and only 3 of the 34 gave a completely negative response to all the inoculations.

The first papule of one patient of 29 measured 73 square mm. with the 50 per cent. tuberculin; the second papule, with the 5 per cent. tuberculin, measured 8 mm. and the third 400. The index in this case was therefore $400 \div 8 = 50$. The highest index in this group was in a patient of 24 whose papules measured, respectively, 32, 0 and 157. His index was thus $157 \div 0 = 157$. The lowest was in a man of 28 with psoriasis and the build suggesting a predisposition to tuberculosis. His figures were 81, 28 and 68, with index of 2.4.

In the cases of actual tuberculosis (first stage), the figures ranged from the series, 8, 7 and 12 (with index of 1.7), to 233, 231 and 262, with index of 1.1. In none in this group was the index over 4.1, and in all but 3 it was below 2. In 9 it was below 1. In the 30 in the second stage and the 39 in the third stage, the index was below 2 in all but one case and below 1 in over 50 per cent. Typical figures for the papules in these groups were 263, 62 and 53; index 0.9, and 178, 101 and 45; index 0.5.

The index in the four groups averaged 20.1; 1.6; 1.4, and 1.2. One important practical conclusion from Frehn's work is that the prospect for tuberculin treatment is most promising when sensitization seems to be most pronounced.

Berliner klinische Wochenschrift

November 16, LI, No. 46, pp. 1805-1828

40 Indirect Shell Wounds. (Zur Kasuistik der Verletzungen durch indirekte Projektile.) E. Melchior.
41 Impeded Breathing through the Nose Does not Seem to Predispose Guinea-Pigs to Tuberculosis. (*Experimentelle Versuche über* den Einfluss behinderter Nasenatmung auf das Zustandekommen der Inhalationstuberkulose.) G. Finder and L. Rabinowitsch.
42 *The Limitations of Organotherapy. (Die Grenzen der Organtherapie.) A. Münzer.
43 Prophylaxis and Treatment of Venereal Diseases in the Active Army. (Geschlechtskrankheiten im Felde.) P. Scharff.
44 Treatment of Diarrhea by Sedative Medication. (Behandlung der Durchfalle im Felde.) E. Fuld.

42. **Limitations of Organotherapy.**—Münzer emphasizes that no organ works independently. Each acts on others and is acted on by others so that it is futile to hope that administering the extract of one organ will take the place of the organ in the general phenomena going on. A dead preparation can never take the place of a living organ. The only real organotherapy, he insists, is the transplantation of a sound organ in the place of the diseased one. Everything else in the way of organotherapy is but a makeshift.

Deutsches Archiv für klinische Medizin, Leipzig

CXVI, Nos. 3-4, pp. 201-436. Last indexed Sept. 12, p. 977

45 Effect of Sodium Bicarbonate on the Excretion of Chlorids and of Milk Sugar Injected Intravenously. J. Goldberg and R. Hertz.
46 Experiments in Salt and Water Metabolism in the Healthy. L. Borelli and P. Girardi.
47 *Primary Pulse Wave in the Human Arm. A. W. Hewlett (Ann Arbor).
48 Effect of Anaphylaxis on Nitrogen Metabolism in Rabbits. R. H. Major (San Francisco).
49 Disturbances in the Automatism of the Heart. E. Weiser.
50 Effect of Bruce's Micrococcus Melitensis and Its Toxins on the Peripheral and Central Nervous System. R. de Nunno.
51 *Palpability of the Arteries. L. Landé.
52 Genesis of Albumin Catabolism in Fever. E. Grafe.
53 *The Coronary Circulation. P. Morawitz and A. Zahn.
54 Dynamics of the Mammalian Heart. II. H. Straub.

47. **Pulse-Flow in Human Arm.**—See abstract 24, page 2071, in THE JOURNAL, Dec. 5, 1914.

51. See editorial, Palpation of Arteries, in THE JOURNAL, Nov. 28, 1914, p. 1956.

53. **Research on the Coronary Circulation.**—Morawitz and Zahn describe in detail their studies of the coronary circulation in living animals and give tabulated results. The quality of the circulation in the heart muscle seems to be dependent on the arterial pressure. Any increase of arterial pressure by abdominal compression, infusion of blood or salt solution and epinephrin increases the flow of blood from the coronary vessels. Epinephrin also has a direct dilating effect on the coronary vessels. It is by far the most effective means of increasing the circulation through the heart muscle. In spite of that it does not seem to be effective in human angina pectoris. Quickened heart action produces unfavorable conditions for the circulation in the heart muscle. Stimulation of the accelerans cordis dilates the coronary vessels; stimulation of the vagus decreases the dis-

charge of blood from them. Pituitary extract and nicotin contract the coronary vessels. This vasoconstriction can sometimes be demonstrated in spite of the increased blood-pressure.

Deutsche medizinische Wochenschrift, Berlin

November 12, XL, No. 46, pp. 1953-1976

55 Treatment of Tetanus. (Behandlung schwerer Tetanusfälle.) T. Kocher and E. v. Behring.
56 Roentgen and Heliotherapy of Wounds in War. (Röntgen- und Lichtbehandlung zur Heilung von Schussverletzungen.) Kromayer.
57 First Battle-Field Impressions. (Erste kriegschirurgische Eindrücke.) Stachow and Wiewiorowski.
58 Traumatic Anosmia and Enophthalmos. J. Strebel.
59 Measurement of Urine Excreted by Infants. (Die Harnabscheidung des Säuglings.) Engel.
60 Improved Technic for the Blood-Count. (Blutkörperchenzählung.) W. Roerdansz.

Deutsche Zeitschrift für Chirurgie, Leipzig

September, CXXXI, Nos. 3-4, pp. 189-396

61 Experimental Removal of One Entire Lung. (Lungenexstirpation.) K. Kawamura.
62 Obturator Hernia. A. Wagner.
63 *Juvenile Deforming Osteochondritis of the Hip Joint. M. Brandes.
64 *Acute Necrosis of the Pancreas. Jenckel.
65 Surgical Experiences in the Servia-Turk War 1912-1913. E. Stierlin and A. L. Vischer.
66 Bacteriologic Importance of the Secretions of the Cutaneous Glands for Aseptic Operations. (Bakteriologische Bedeutung der Hautdrüsensekrete bei der aseptischen Chirurgie.) Y. Ozaki.
67 *Bone Cysts. (Pathogenese der sogen. Knochencyste.) J. Bolognesi.

63. **Juvenile Deforming Osteochondritis.**—Brandes reports ten cases with the Roentgen findings and remarks that the cases of supposed tuberculous hip-joint disease with recovery may have been merely cases of this comparatively benign affection, juvenile deforming osteochondritis. (See The Journal, May 2, 1914, p. 1444, abstract 174). Ankylosis does not seem to occur in this affection. He applied a walking plaster cast for two or three months, materially improving conditions so that afterward there was much less limp.

64. **Acute Necrosis of the Pancreas.**—Jenckel reviews his experience with acute necrosis of the pancreas in nine cases, all men but three. The youngest was 28, the oldest 75. With one exception all were well nourished and inclined to corpulency. There was gall-stone trouble only in three of the cases. In three other cases the necrosis developed after a laparotomy. With severe clinical symptoms an operation is indicated without delay, but temporizing is justified if the symptoms are mild and the bowels move after one or two enemas, and the pulse keeps good and not much accelerated —when these conditions are encountered dietetic measures alone may bring relief. The cases reported demonstrate anew that slight attacks of a similar character had occurred before and passed harmlessly over. Even a very severe form may spontaneously retrogress, as in one of his cases, but this is so rare it should not be counted on. Operative treatment can cure only when the toxic action has not been too severe and the further progress of the necrosis can be checked.

67. **Pathogenesis of Bone Cysts.**—Bolognesi reports entirely negative results from his experimental research on the origin of bone cysts. Neither with trauma nor with an infectious process was he able to induce the formation of a bone cyst.

Jahrbuch für Kinderheilkunde, Berlin

November, LXXX, No. 5, pp. 467-560

68 Severe Anemia in Childhood. E. Stettner.
69 *The Pathologic-Anatomic Changes in the Myocardium and Heart Ganglia in Scarlet Fever. A. Stegemann.
70 Two Peculiar Diseases of Breast-Fed Infants in Japan: Infantile Beriberi; Spasmophilic Dyspepsia. (Säuglingskakke.) (Spasmophile Dyspepsie bei natürlicher Ernährung.) K. Takasu.
71 Inflammation of the Accessory Cavities of the Nose as Complications of Scarlet Fever. (Nebenhohlenentzündungen der Nase bei Scharlach.) M. Paunz.

69. **Changes in the Myocardium and Heart Ganglia in Scarlet Fever.**—From an examination of forty-nine cases Stegemann comes to the following conclusions: In severe toxic cases of scarlet fever of short duration, the parenchymatous changes in the heart muscle are slight. In the infectious form of long duration, in addition to acute parenchymatous degeneration, there are fatty degenerations and necrosis. Interstitial round-cell infiltration of the heart wall is lacking in the short severe toxic cases, but is always present in the long infectious cases. In the stroma of the heart ganglia, round-cell infiltration can be demonstrated in the first days of the disease; its intensity is dependent on the severity and duration of the disease. Fatty degeneration and necrosis of nerve cells were observed on the first day of the disease. The number and size of the Nissl bodies were markedly decreased in the severe toxic cases, in contrast with the infectious cases. These facts' seems to show that in the severe toxic cases of scarlet fever, of short duration, the cause of the heart weakness lies in pathologic changes in the heart ganglia. The nervous theory of the origin of the heart disturbance in scarlet fever has gained ground recently at the expense of the myocardial theory.

Medizinische Klinik, Berlin

November 15, X, No. 46, pp. 1679-1702

72 Not Every Dysentery is Contagious. (Wandlungen des Ruhrbegriffs.) H. Quincke.
73 Small-Pox and Its Prophylaxis. (Blattern und Blatternbekämpfung) G. Paul.
74 Treatment of Wounds on the Battle Field. (Wundbehandlung im Felde.) A. Köhler.
75 Treatment of Tetanus. Spanuth.
76 Atrophy and Rigidity of Chest Muscle in the Tuberculous. (Muskelatrophie und Muskelstarre am Brustkorb des Phthisikers.) K. Hart.
77 Continuous Slumber for Three and a Half Years after Injury of the Brain; Recovery. (Kontinuierlicher, viereinhalb Jahr andauernder Schlafzustand im Anschluss an Kopftrauma, mit Ausgang in allmahliche Wiedergenesung.) A. Eulenburg. Commenced in No. 45.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

September, XL, No. 3, pp. 332-442

78 The Hymen. (Zur Frage des menschlichen Hymen.) H. Klaatsch.
79 Pathogenesis of Eclampsia. O. Vertes.
80 Gas Phlegmon after Criminal Abortion. M. Dirks, Marmetschke and Kriebel.
81 Histogenesis of Myoma of the Uterus. K. Ulesko-Stroganowa.
82 *Differential Diagnosis of Chronic Appendicitis. C. W. Bischoff.

82. **Differential Diagnosis of Chronic Appendicitis.**—In 1911 Bastedo proposed a method of differential diagnosis of appendicitis: A rectal tube is introduced into the previously emptied intestine, and the colon filled with air. If the appendix is diseased, the patient feels a sharp pain in the region of the appendix, sometimes radiating to the umbilicus. If the appendix is normal, there is no pain, but only a feeling of distention, or sometimes an unpleasant sensation between the umbilicus and the symphysis. Of course, overdistention should be avoided; the sign is elicited by moderate distention. To test the value of this sign, Bischoff tried it in a series of thirty-seven laparotomies. In twenty-three of them Bastedo's sign was present; in all these cases there was chronic appendicitis of the most varied forms, adhesions to the neighboring tissues, contraction of the mesenteriolum, kinking, stenosis, fecal calculi or oxyuris. In fourteen cases Bastedo's sign was not present, and in these cases the appendix was found normal. Particularly interesting were six cases in which the right adnexa were diseased, and in which Bastedo's sign furnished a differential diagnosis from appendicitis. Another interesting case was one of cholelithiasis All the symptoms were those of appendicitis, pain at McBurney's point, stomach symptoms, pain in the region of the umbilicus, etc., and there were no decided symptoms of cholelithiasis. Bastedo's sign was negative, and the appendix was found absolutely normal.

Distention of the colon is also valuable in differentiating between appendicitis and neuralgias. The latter are frequently found in gonorrheal patients and often cause pain at McBurney's point. Pain at McBurney's point should not be so much emphasized as a sign of appendicitis, for it is often found in other conditions. Rost asserts that Bastedo's sign is positive not only with disease of the appendix, but also in pathologic conditions in the colon. Bischoff has no data on this subject. Rost says, too, that the pain appears only if there are changes in the mesenteriolum which bring the appendix into a certain abnormal relation to the cecum, but Bischoff found it positive when the mesenteriolum was entirely normal and the appendix alone was diseased. In the cases that he examined after operation there was no longer the slightest pain in the appendix region when the colon was distended.

Monatsschrift für Kinderheilkunde, Berlin

XIII, No. 4, pp. 165-204

83 Dermographism in Childhood. A. Brinckmann.
84 Theory and Practice in Friedmann's Treatment of Tuberculosis. F. Lust.
85 Acidity in Infant's Stomach Content. H. Davidsohn.
86 Historical Discussion of "Recurring Umbilical Colic" in Children. O. Herbst.
87 Treatment of Stenosis of the Larynx in Childhood. G. Siewczynski.

Münchener medizinische Wochenschrift, Munich

November 17, LXI, No. 46, pp. 2233-2268

88 Treatment of Syphilis. (Abortivkur, Spirochätenreste und kombinierte Behandlung der Syphilis.) W. Lier. Concluded in No. 47.
89 *Roentgen Treatment of Hypertrichosis. D. Chilaiditi.
90 *Germs Congregate in Fetus and Spare the Mother. (Die Infektionen des Fötus.) F. Masay.
91 *Mechanical Devices to Aid in Overcoming Writer's Cramp. (Neue Apparate zur Schreibkrampfbehandlung.) O. B. Meyer.
92 *Tetanus. Hochhaus, Kreuter, E. Müller, Rothfuchs and K. Alexander.
93 Improved Technic for Artificial Legs. (Künstliche Beine.) v. Baeyer.
94 Brace for Extension in War Wounds of the Long Bones. (Die Hackenbruchschen Distraktionsklammern zur Behandlung von Knochenverletzungen im Felde.) A. Schnée.
95 War Wounds of the Nervous System. (Kriegsverletzungen des Nervensystems.) Hotz. Commenced in No. 45.

89. **Cosmetic Depilation.**—Chilaiditi applies the Roentgen rays to the just sprouting hair and thus kills it. The hairs are pulled with tweezers and, two or three days later, the papilla is exposed to the rays filtered through 3 mm. aluminum plus 5 mm. leather. He says that the papilla and the hair as it first sprouts are most susceptible to the rays during this period of intense growth. A single sitting answers the purpose. The dose must be about 15 Holzknecht units, enough to induce a just visible reaction of the first grade.

90. **Infection of the Fetus.**—Masay experimented with the *Streptobacterium fetidum* injecting gravid guinea-pigs with it. The placenta was no obstacle to its passage into the fetus, and it actually seemed as if the fetus served as a kind of "fixation abscess," the germs congregating in it and forsaking the maternal organism. Two hours after the injection of the germs they were evident in the fetal blood. Emptying the uterus thus clears out the hosts of germs that have congregated in the fetus. This suggests that abortion is a natural phenomenon of defense. It is possible that the germs in the maternal organism may go at once to the fetus apparently without infecting the mother.

91. **Mechanical Devices for Correction of Writer's Cramp.**—Meyer treats the spastic forms of writer's cramp by having a hollow cast made of the hand in the proper position for writing. It forms thus a kind of rigid half glove fitting over the fingers and holding them immovably in the proper position for writing, thus preventing any spastic contracture until the hand outgrows the tendency. He gives illustrations of the cast made in two cases and used with complete success.

92. **Tetanus.**—Six articles are devoted to this subject, relating experiences with tetanus among the wounded. Hochhaus has had 46 cases, Kreuter 31, Rothfuchs and Alexander 10 and 8. Müller has found long hot baths a remarkable relief for the patients, and Rothfuchs reports benefit from salvarsan in 4 cases. Some claim great benefit from magnesium sulphate; others have nothing good to report from it. Alexander states that his 8 patients given 10 gm. of chloral in a single dose each day have all recovered; 2 given only 5 gm. died. Müller comments on the extreme relief afforded by tracheotomy in some cases. One of his 2 tracheotomized patients is apparently recovering. The other succumbed to weakness of the heart after subsidence of the tetanus.

Therapeutische Monatshefte, Berlin

November, XXVIII, No. 11, pp. 674-716

96 *By-Effects of Vaccination. (Zur Frage der Impfschädigung.) F. Göppert.
97 Vaccination against Typhoid. (Die Schutzimpfung gegen Typhus abdominalis.) H. Braun.
98 *Treatment of Tetanus. G. L. Dreyfus.

96. **Injury from Vaccination.**—Göppert has made a point in the last few years of following up every case of alleged injury resulting from vaccination, and states that he has found cases which imperatively teach a lesson of caution in certain respects. This is especially important in case of chronic eczema; the slightest trace of chronic eczema should cause the child to be excluded from vaccination for another year, even if six months have elapsed since the eczema was apparently cured. This should be the rule also if there is any case of chronic eczema in the family. Even a year after the healing of the eczema may be too early to do the vaccination. In regard to secondary infection he remarks that as erysipelas is far more serious for infants under 6 months old than later, children should not be vaccinated until they are over 5 months old. The scab in the second or third week is liable to come off, leaving a point of lesser resistance and inviting erysipelas. Children also with acute or chronic digestive disturbances or unstable convalescence from acute, recurring or chronic intestinal catarrh should be scrupulously excluded from vaccination. Some children react to every slight cold with fever or diarrhea, and when such troubles develop after vaccination they require suitable treatment not to be allowed to drag along. Copious intake of water should be enforced in particular. He adds that profuse sweating softens the skin and predisposes to furunculosis, etc., so that this is another reason for preferring to vaccinate outside of the heated term.

He covers the vaccinated region with medicated gauze held in place with strips of plaster with spaces between, or a perforated plaster. If there is much pain and restlessness or the axillary glands are swollen, he dresses the region with aluminum acetate after smearing with petrolatum. For this he cuts a slit in the center of a square of several thicknesses of gauze, 30 sq. cm., and has the arm slipped through the slit. The gauze is then drawn up and fastened to cover the arm and axilla. The dressing should be changed every twelve hours. The mother who brings the child for vaccination should be asked whether the child has been sick recently or has ever suffered from diarrhea or eruptions, cough or convulsions, and whether any one else in the family is sick. When vaccinating on a large scale, it is better to have the entire trunk exposed for examination, and any suspicious findings call for detailed investigation later. He adds that the ninth or tenth day is better for the reexamination than the seventh day, as any complications are then at their height as a rule.

98. **Tetanus.**—Dreyfus has already encountered twenty-four cases of tetanus among the wounded in the Frankfurt hospitals, and remarks that 500 cases developed among the wounded after the battle of Mukden in the Russo-Japanese war. In the Prussian army during the last twenty years of peace there have been only ninety-six cases. He emphasizes the vital necessity for local treatment of the wound and for avoiding anything which will cause the formation of a scab.

Therapie der Gegenwart, Berlin

November, LV, No. 11, pp. 433-456

99 Acute Hemorrhagic Colitis without Dysentery Bacilli. (Ueber unspecifische akut hamorrhagische Kolitiden.) H. Strauss.
100 Magnesium Sulphate in Tetanus. *J. v. Roznowski.*
101 *Harmless Forms of Diabetes in the Young. (Zuckerkrankheit bei jüngeren Menschen.) E. Frank.
102 Impressions in a Field Hospital. (Erlebnisse und chirurgische Erfahrungen aus einem deutschen Feldlazarett.) *R. Mühsam.*

101. **Harmless Diabetes in the Young.**—Frank refers to the form known as renal diabetes, that is, without abnormal proportions of sugar in the blood. The more often the blood is examined for sugar as a routine diagnostic measure, the

more numerous such cases are becoming. The glycosuria of pregnancy is probably of this type. The trouble is not the result of injury of the organs regulating the metabolism of carbohydrates, but merely some functional disturbance of the kidney epithelium, traceable to some slight injury, possibly an overfunctioning. There is scarcely any probability of this renal diabetes becoming transformed into severe diabetes with large losses of sugar and acidosis. Weiland, Boenniger and Salomon have each reported cases under observation for five or ten years in which the syndrome kept stationary or improved. Transformation into actual kidney disease has never been observed, according to the literature on the subject. Only the condition known as pregnancy kidney may be regarded as the rarely occurring second phase of renal diabetes. There is none of the complications of ordinary diabetes, such as neuritis, pruritus, furunculosis, cataract, retinitis or falling out of the teeth, as the proportion of sugar in the blood is not pathologically high. There is no need for dietetic restrictions, and the renal diabetes may be regarded as a harmless anomaly in examining for life insurance.

Wiener klinische Wochenschrift, Vienna

November 5, XXVII, No. 45, pp. 1443-1470

103 Vaccination against and Treatment of Typhoid. (Ueber Schutzimpfungen und eine Bakteriotherapie des Typhus abdominalis.) R. Kraus.
104 *Sexual Diseases and the War. (Geschlechtskrankheiten und der Krieg.) E. Finger.
105 Influence on Mouse Tumors of Roentgen Rays. (Beeinflussung von Mäusetumoren durch Röntgenstrahlen.) O. Frankl and C. P. Kimball (Chicago).
106 Notifiable Infectious Diseases at Vienna 1901-1910. (Anzeigepflichtige Infektionskrankheiten Wiens). S. Rosenfeld. Commenced in No. 43.

104. **Venereal Disease and War.**—In the course of his long study of this subject, Finger states that even on a peace footing there is a daily average of 1,748 men under treatment for venereal disease in the Austrian army. During war time the proportion usually increases as he shows by statistics from one army corps in the Franco-Prussian War (first Bavarian): in 1871 the proportion ran up from 10.2 per thousand in January to 77.7 per thousand in May. Extensive epidemics in various districts followed the disbanding of the troops at the close of that war.

Zeitschrift für Kinderheilkunde, Berlin

August, XI, Nos. 5-6, pp. 337-516

107 Malformations of the Heart. (Herzmissbildungen.) F. Heller and G. B. Gruber.
108 Testing Kidney Function in Infants and Older Children. (Nierenfunktionsprufung.) A. Bosler.
109 Love and Hatred of Children for Parents. (Die nosologische und kriminologische Bedeutung des Elternkonfliktes der Jugendlichen.) E. Lazar.
110 *Rachitis and Internal Secretion. E. Rominger.
111 *Pathogenesis of Digestive Disturbances in Infancy. IX and X. H. Bahrdt, F. Edelstein and E. F. Welde.
112 Meningitis as a Complication of Diphtheria. F. Reiche.
113 Bromoderma Tuberosum in a Nine-Months-Old Infant Following the Administration of Calcium Bromid. A. Dollinger.
114 Case of So-Called Hemispasm of the Lower Lip. E. B. Grünwald.
115 Diastatic Action of Urine of Children. W. B. McClure and P. S. Chancellor (Chicago).
116 Plethysmographic Examinations of Normal and Sick Children. R. Hess, S. Gordin and A. Simons.
117 Discussion of J. Husler's Work on Symmetrical Progressive Fat Atrophy in Children. A. Simons.

110. **Rickets and Internal Secretion.**—Rominger examined forty-one children and six normal adults by Abderhalden's method to determine whether any disturbance of the glands of internal secretion could be demonstrated in rickets. Twenty-eight of these individuals were rachitic and nineteen clinically free from rickets. He could not get uniform results in either the rachitic or non-rachitic cases, and concludes that the protective ferment reaction is not specific. No disturbance of function could be demonstrated by the Abderhalden method in the thyroid, thymus, ovary or testicle. Deutsch has claimed that there was almost always a regular digestion of thymus tissue by normal sera, but Rominger could not confirm this. He does not believe that Abderhalden's dialysis method can be utilized for the examination of the function of organs. It remains to be seen whether Griesbach's proposed quantitative determination of the albumin in the dialysate can be utilized for this purpose.

111. **Pathogenesis of Digestive Disturbances in Infancy.**—In overfeeding and decomposition of foods volatile fatty acids are formed that may be regarded as hypothetical toxins. Bahrdt and Edelstein have previously published papers in which they discussed the methods of determining these acids, and their effect on the intestine and on metabolism in animal experiments; also determination of them in the stomach contents and stools of infants. This paper takes up the examination of various foods with reference to their content in such acids—fresh milk, buttermilk and "spoiled" milk, containing various kinds of bacteria. They fed dogs with milk containing pure cultures of many different kinds of bacteria. After two hours the dogs were killed and the stomach and intestines examined for bacteria and for fatty acid content. They come to the conclusion that milk, even when infected with pure cultures of bacteria, does not form, within the first few days, sufficient quantities of volatile fatty acids to produce acute digestive disturbances. These facts indicate that spoiled milk does not play the preponderant part in the ordinary acute summer diarrheas of infants. The question they are trying to decide is whether these disturbances are caused by substances in the food or by changes in the chyme in the infant's body. Having determined that they are not caused simply by bacterial infection of milk, they intend to take up further experiments to find whether infected milk will produce worse effects if given in conjunction with conditions that interfere with the motor and secretory functioning of the stomach, such as heat and overfeeding. The details of their experiments are given in tabulated form, and there is an extensive bibliography.

Zentralblatt für Chirurgie, Leipzig

November 7, XLI, No. 45, pp. 1657-1672

118 Pincers to Turn Appendix Stump Inside. (Pinzette mit Innenschieber zur Einstulpung des Wurmforsatzstumpfes. G. Kelling.

November 14, No. 46, pp. 1673-1688

119 *Forward Dislocation of the Clavicle. (Zur Behandlung der Schlusselbeinverrenkung nach vorn.) E. Braatz.
120 *Phenol-Camphor in Treatment of Infectious Processes. (Kurze Bemerkung zu der Originalmitteilung von Schiele.) G. E. Konjetzny.

119. **Forward Dislocation of the Clavicle.**—Braatz found that the dislocation recurred after reduction when the shoulder was drawn backward in the case reported. To prevent this, he bandaged the shoulder, pushing it forward and holding it in this pushed-over position with a hard pad of cotton at the back of the joint, held in place with strips of adhesive plaster and other bandages to keep the shoulder thus pushed forward. The clavicle and shoulder were kept immobilized in this way for two months and conditions have persisted normal since. This answers the purpose as well as Danielsen's method (described recently in these columns, Nov. 21, 1914, p. 1827), while it is far less inconvenient.

120. **Phenol-Camphor Treatment of Suppurating Process.**—Konjetzny says that he has been using this method of treatment for years for purulent phlegmonous processes and with good results. Chlumsky's original formula seems to him the best. This is 30 parts liquefied phenol and 60 parts triturated camphor with 10 parts alcohol. It is especially useful in pyocyaneus infection and tetanus, but there is danger of phenol poisoning if used too profusely in large cavities. He moistens gauze with the solution, wrings it out and covers the lesion with the gauze. He says we must not rely too implicitly on the alleged paralyzing of the phenol by the camphor.

Zentralblatt für Gynäkologie, Leipzig

November 7, XXXVIII, No. 45, p. 1393-1408

121 Dangers of the Stem Pessary. (Gefahren des Intrauterinstiftes.) A. Rieck.

November 14, No. 46, pp. 1409-1424

122 *Ultimate Outcome after the Schauta-Wertheim Operation for Prolapse of the Uterus. E. Clauss.

122. **Treatment of Genital Prolapse by Interposition of the Uterus.**—Clauss has compiled the statistics in regard to the Schauta-Wertheim operation for prolapse, repairing the pelvic floor with the uterus itself. Recurrence of the prolapse occurred in from 2.9 to 20 per cent. of the cases, and pregnancy followed the operation in two cases at Hamburg last year although the technic was supposed to have rendered this impossible. Further modifications are here proposed which will effectually sterilize beyond question. This method should never be used unless the woman is over 35 or 37 or already has several children or conditions are exceptionally serious. The history of 51 out of 62 cases is known for two to six years since the operation was done at the Hamburg clinic in question. A complete cure was realized in 72 per cent. In 7 others besides the 37 in this group the patients were free from all subjective disturbance but the anatomic conditions were not perfect. The improvement thus realized in 86 per cent. of the cases compares favorably with the results of other methods. One patient succumbed to sepsis; this case teaches the importance of healing up all old lacerations and erosions before attempting the Schauta-Wertheim operation.

Zentralblatt für innere Medizin, Leipzig

November 7, XXXV, No. 45, pp. 985-1000

123 Changes in the Blood during an Epileptic Seizure. (Zur Hämatologie des epileptischen Anfalles.) J. Löwy.

Gazzetta degli Ospedali e delle Cliniche, Milan

November 5, XXXV, No. 123, pp. 1893-1908

124 Malaria with Laryngeal Disturbance. (Malaria e laringismo.) G. Cremonese.
125 New State Regulations in Regard to Cattle and Meat. (Il nuovo regolamento di polizia veterinaria.) First part in No. 107.

November 8, No. 124, pp. 1909-1924

126 Compresses Kept Automatically Moist. (L'impacco permanente.) F. Steiner.

November 12, No. 125, pp. 1925-1940

127 Post-Diphtheric Polyneuritis. A. Carafoli.

November 15, No. 126, pp. 1941-1956

128 Opening Vein in Foot Cures Uremic Convulsions in Acute Nephritis. (Il salasso della vena pedidea nell'uremia cerebrale epilettica da nefrite acuta.) G. De G. Giunta.

Policlinico, Rome

Medical Section, XXI, No. 11, pp. 485-532

129 Alleged Antitryptic Power of the Blood-Serum. (Sul preteso potere antitriptico del siero di sangue.) G. Antonelli.
130 Roentgenography of the Sella Turcica in Relation to Disease of the Pituitary Body. (L'indagine radiologica della sella turcica in rapporto alle malattie dell'ipofisi.) L. Coleschi.
131 Fatal Acute Necrosis of the Pancreas. (Sulla morte per lesioni pancreatiche acute.) L. Lattes.

Riforma Medica, Naples

November 7, XXX, No. 45, pp. 1233-1260

132 *Nervous Diseases; 5,000 Dispensary Cases. R. Colella and B. Frisco.

132. **Nervous Disease at Messina and Palermo.**—Colella and Frisco found in 54 per cent. of the 5,000 cases reported that syphilis, alcoholism or tuberculosis in the parents was an important factor in the nervous diseases encountered. Only 20 per cent. were found free from signs of tuberculosis or syphilis. In 10 per cent. there were signs of both; in 40 per cent. tuberculosis alone and in 30 per cent. syphilis alone. Among the children with nervous affections, the tuberculin reaction indicated tuberculosis in 61.7 per cent.; syphilis in 23.8 per cent. and both of these in 14.7 per cent. Among 430 inmates of the Palermo Insane Asylum, the Wassermann reaction was positive in 18 per cent. Consanguineous marriages are also a factor in the nervous diseases; the parents were closely related in 30 per cent. of the 5,000 cases. Exophthalmic goiter was also frequent (92 cases) and goiter with secondary disturbances in 125 cases. The influence of heredity was particularly marked here; in some families the mother had had exophthalmic goiter before her marriage and some of the children developed it at an early age. They add that all these cases of simple and exophthalmic goiter came from one district with a single water supply. There were 123 cases of infantile spinal paralysis; they thus formed 21.7 per cent. of the 453 cases of spinal nervous affections. Tabes is comparatively rare, considering the prevalence of syphilis. Epilepsy is quite prevalent in Sicily; it formed 10 per cent. of the 4,276 patients with nervous disease, while neurasthenia was observed in 15 per cent. and hysteria in 11.8 per cent. The food, the lime in the water and the lack of exercise seem to be responsible for the unusual prevalence of the gouty diathesis in men and obesity in women.

Hospitalstidende, Copenhagen

November 18, LVII, No. 46, pp. 1369-1392

133 *Fat Tissue as Filling for Cavities in Bones. (Plombering af Knoglekaviteter med frit transplanteret Fedtvæv.) I. Svindt.

133. **Fat Filling for Bone Cavities.**—In Svindt's three cases the large flap of fat tissue was taken from the buttocks to plug a cavity left in the tibia after a process of syphilitic or tuberculous osteomyelitis. The patients were up in two or three weeks. The rapid healing and the perfect cosmetic effect are great advantages of this technic. The patients were two young women and a boy of 10. The largest chunk of adipose tissue, taken from the buttocks, measured 12x3.5x3 cm.; the next 9x2.5x3 cm., while the boy's flap was 6x2x2.5 cm. Each healed in place by primary intention and without reaction as the cavity was sterile; this method is scarcely applicable if there is still active infection in the focus. Its field is for old torpid lesions, such as syphilitic and ossifying osteomyelitis. Fistulas and secondary infection naturally contra-indicate it. Tuberculous processes can be treated in this way only when it is certain that all the diseased tissue can be removed.

Svenska Läkaresällskapets Handlingar, Stockholm

XL, No. 3, pp. 217-310

134 Intracranial Murmurs; Sixty-Six Cases. (Om kraniella blåsljud.) H. Koster.
135 *Chronic Polycythemia; Nineteen Cases. I. Hedenius.

135. **Chronic Polycythemia.**—Hedenius has encountered nine cases of polycythemia with pronounced pathologic conditions and also ten cases in which the condition otherwise seemed practically physiologic. He reviews the literature on polycythemia and gives the details of his nineteen cases. The high blood-pressure seems to be a complication and not a consequence of the polycythemia. In three cases the spleen became reduced in size during menstruation and the number of reds diminished. At other times they ranged from 6.1 to 14.5 millions in the first group and from 5.5 to 7.3 millions in the others. In five in the first group the figure was over 9 millions. All had different combinations of the typical symptoms, cyanosis, enlargement of the spleen and high blood-pressure, with the unusual numbers of reds. There was also a tendency to headache, slight dizziness, partial incapacity for work and restless sleep or somnolency, suggesting a cerebral-neurasthenic state. The hemoglobin percentage is relatively low so the hemoglobin index is low but the blood-producing organs show signs of exaggerated functioning. The proportion of mononuclears was also abnormally high. The low index explains why the polycythemia escapes recognition so long in so many cases. The course and nature of the chronic polycythemia seem to stamp it as a constitutional affection like gout, obesity and diabetes, and it is noteworthy that the gouty tendency was pronounced in eight of his nineteen cases. It is possible that epinephrin may have something to do with the exaggerated functioning of the bone marrow. Food poor in purins and iron seems to have a beneficial action on the subjective symptoms. Repeated venesection has given temporary relief in some cases. Roentgen exposures seem to reduce the number of reds for a brief period but exposures of the spleen have been known to aggravate the trouble. One case has been reported in which benzol was given for ten days in a daily dose of 1.5 gm. and both the subjective and objective symptoms grew worse under it. In this case, however, there were complicating pulmonary tuberculosis and nephritis. It is possible that benzol in certain cases may prove useful; a number of experiences confirming this possibility have been published. All other drugs used to date have proved disappointing. McLester gave benzol in one case for six months and the reds gradually subsided from 8,300,000 to 4,300,000. His dose was 3 gm. a day.

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THE LIMITATIONS AND POSSIBILITIES OF PRENATAL CARE

BASED ON THE STUDY OF 705 FETAL DEATHS OCCURRING IN 10,000 CONSECUTIVE ADMISSIONS TO THE OBSTETRICAL DEPARTMENT OF THE JOHNS HOPKINS HOSPITAL [*]

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My first duty on this occasion is to express my sincere appreciation of the honor of being elected to the presidency of this association, and, as the incumbent of that office, to thank the very efficient local committee of arrangements for their efforts in making it possible to hold our meeting at a time when our sympathies are enlisted in a much broader and more serious cause.

Before taking up the discussion of the subject which I have chosen for my address, I wish to go on record as endorsing the objects of the association, as well as to bear witness to the wisdom displayed in its original organization. In no other way, I believe, could such wide-spread interest have been aroused and so much good have been accomplished as by bringing together all classes of persons interested in the welfare of infants. At each of the meetings which I have attended I have been greatly impressed with the character of the audiences, and I feel sure that the association of trained nurses, social workers, statisticians and physicians, with philanthropically inclined laymen, has been productive of an amount of good which could have been effected in no other way, and which would have been impossible had the association been made up of any single class of persons, no matter how interested or intelligent they might be.

Naturally, my interests in the association are primarily as an obstetrician and deal with the prevention of infant mortality in the earliest periods of life and even before birth. Investigation along these lines has led me to study the character of the obstetric care which is available for the great majority of women in this country, and has convinced me that it is inexcusably poor. This, however, is neither the time nor the place to consider such problems; but, when I face an audience such as this, I almost wish, were the country not already oversupplied with societies, that a somewhat similar association might be organized for the study of the problems connected with motherhood and the diseases peculiar to women, and for teaching the women of this country that they have a right to the best available treatment and care, which should be at least as good as that available for their young children, and better than that so freely given to the domestic animals by our national and state governments.

The theme which I have chosen for my address is "The Limitations and Possibilities of Prenatal Care." Certain phases of the subject have frequently been presented to you, and will be one of the topics for discussion at this meeting. I am, however, inclined to feel that it is often considered from too narrow a point of view, and my chief object in preparing this address is the hope that I may be able to impress on you that prenatal care covers a very wide field, which, while primarily obstetric, is not limited to any one branch of medicine or social activity.

The foundation of my remarks is the study of 705 fetal deaths which occurred in ten thousand consecutive admissions to the Obstetrical Department of the Johns Hopkins Hospital, 6,500 indoor and 3,500 outdoor cases. In this series I have included all deaths occurring in children born between the seventh month of pregnancy, the so-called period of viability, and full term, as well as those occurring within the first two weeks after delivery. For convenience in consideration I have classified the children as premature or mature, according as their weight varied between 1,500 and 2,500 gm., or exceeded the latter figure. Of the 705 deaths, 334 were in the former, and 371 in the latter category.

These figures somewhat underrepresent the total mortality, as they do not include many children which perished later from the causes enumerated below, either in my service, in other departments of the hospital or in their own homes. Furthermore, it must be borne in mind that they do not necessarily represent the results which may be obtained in private practice, but are based on the material entering a large general hospital, which includes many women who had been improperly treated at home and were admitted to the hospital in desperate straits.

Moreover, our material differs from that of many institutions in that 4,600 out of the 10,000 mothers were colored, thereby making it possible to compare the incidence of certain causes of death in the two races. In addition, our statistics are of unusual value for two reasons: First, that every one of the 10,000 after-births in the series has been carefully described and subjected to routine microscopic examination — a procedure which sometimes yields most important information; and secondly, that most of the dead babies have been subjected to autopsy. Consequently, the causes of death have been ascertained with more than usual accuracy; but even in such favorable circumstances, it is not always possible to make a positive diagnosis.

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[*] Presidential address, delivered before the American Association for Study and Prevention of Infant Mortality, Boston, Nov. 12, 1914.

Table 1 gives the gross results of our investigations, the causes of death being classified into twelve general groups, while information is also given as to the prematurity or maturity of the children and their race.

The most striking features of the investigation are the following:

(*a*) Syphilis is far and away the most common etiologic factor concerned in the production of death, presenting an incidence of 26.4 per cent.

(*b*) Toxemia, including eclampsia, nephritis and occasional rare conditions, which is usually regarded as the condition *par excellence* which can be influenced by prenatal care, is the cause of only 6.5 per cent. of the deaths, and consequently is accountable for only one-fourth as many as syphilis.

(*c*) Notwithstanding most painstaking investigation, the cause of death could not be satisfactorily explained in 127 cases, or 18 per cent.

TABLE 1.—CAUSATION OF 705 FETAL DEATHS

Cause	White	Black	Total	Percentage Incidence	Premature		Mature		Estimated Percentage after Prenatal Care
					White	Black	White	Black	
1. Syphilis	35	151	186	26.4	22	112	13	39	13
2. Unknown	39	88	127	18	12	37	27	51	15
3. *Dystocia*	*61*	*63*	*124*	*17.6*	4	*6*	*57*	*57*	*6*
4. Various	30	49	79	11.2	7	11	23	38	11.2
5. Prematurity	14	36	50	7.1	14	36	—	—	3.6
6. Toxemia	32	14	46	6.5	17	6	15	8	2
7. Deformity	18	6	24	3.4	8	3	10	3	3.4
8. Inanition	11	12	23	3.3	9	10	2	2	1.6
9. Placenta praevia	20	2	22	3.1	10	2	10	—	1.5
10. Premature separation of the placenta	7	6	13	1.8	4	4	3	2	1
11. Suffocation (criminal)	3	3	6	0.9	—	—	3	3	0.5
12. Debility	3	2	5	0.7	—	—	3	2	0.5
Totals	273	432	705	100.0	107	227	166	205	59.3
	705				334		371		
					705				

(*d*) The death rate is nearly twice as high in the blacks as in the whites, 9.4 and 5.1 per cent., respectively, and equals or exceeds that of the whites in all but three categories, namely, toxemia, deformities and placenta praevia.

CAUSES OF FETAL DEATH

After these preliminary remarks, I shall consider each cause of death separately, and afterward draw certain conclusions as to their bearing on the problems of prenatal care.

1. *Syphilis.*—Although it has long been known that this disease plays an important part in the causation of fetal death and should always be borne in mind when successive pregnancies end in the birth of dead children, I was greatly surprised to find that it was accountable for 186 of the 705 deaths, or 26.4 per cent., and that it constituted the most common single etiologic factor concerned. It was observed much more frequently in the blacks than in the whites, the incidence being 35 and 14 per cent., respectively, and was the direct cause of two-fifths of the deaths occurring in the premature children.

These startling figures, however, do not tell the whole story of the ravages of the disease, as routine microscopic study of the placenta showed that 350 syphilitic children had been born of the 10,000 women under consideration. In Table 1, 186 are included, leaving nearly as many more — 164 — which were still alive at the end of two weeks, and either soon died or presented manifestations of hereditary syphilis later in life. Even these figures probably underestimate the incidence of the disease, as a diagnosis was made only when characteristic microscopic changes were present in the placenta, a positive Wassermann reaction demonstrated in the fetal blood, or specific lesions were found at autopsy. Accordingly, it is probable that a certain number of cases escaped detection, and plausibility is lent to such a contention by the fact that fifty-three of the children in the next group were born in a macerated condition, and experience teaches that 80 per cent. of such children are syphilitic.

However that may be, the fact remains, which cannot be too strongly impressed on you, that syphilis is the most common single cause of fetal death, not to speak of its ravages in the children which do not immediately succumb to it, and that in the future no statistics bearing on prenatal care can make any claim to completeness which do not take it into consideration.

2. *Unknown Causes of Death.*—Strange to say, the second largest contingent of fetal deaths is included under this category. One hundred and twenty-seven children, 18 per cent., were born dead or succumbed during the two weeks following birth without our being able to discover a satisfactory explanation for the fatal issue. Indeed, the only suggestive finding was the fact that fifty-three, or nearly one-half, of the children were macerated when born. I have already suggested the possibility that undetected syphilis may have been concerned, and I believe it is reasonable to assume that probably forty of these children, or approximately one-third of the group, really perished from it. With this exception, no definite statement can be made, and we are compelled to confess that the means at present at our disposal do not always enable us to adduce a satisfactory explanation for a considerable number of fetal deaths.

3. *Dystocia.* — Under this caption I have grouped together the deaths following mechanically difficult labor, whether operative or spontaneous. In many instances it was the result of disproportion between

the size of the child and the pelvis of the mother, while in a smaller proportion it was due to abnormal presentations of the child or to other factors resulting in delayed labor. The group, however, does not include the difficult labors associated with eclampsia or complicated by hemorrhage preceding the birth of the child, which are classified under separate headings.

One hundred and twenty-four fetal deaths are included in this category, an incidence of 17.4 per cent., and occurred more frequently in whites than in blacks — 22 and 14.5 per cent., respectively. This is a somewhat surprising conclusion when it is recalled that abnormal pelves are noticed three or four times more frequently in black than in white women, and that the most extreme degrees of deformity occur almost exclusively in the former. To my mind, the explanation for this apparent contradiction is afforded by two factors: First, colored children as a rule are smaller and have softer heads than white children, with the result that moderate degrees of pelvic contraction are frequently compensated for, so that easy spontaneous labor may take place in spite of the contracted pelvis. Secondly, extreme disproportion is readily recognized, when the patients are promptly subjected to cesarean section or other radical mode of delivery, with ideal results for both mother and child. On the other hand, in white women, who as a rule present only moderate degrees of pelvic contraction, the children are comparatively large, so that the resulting disproportion is relatively great. Unfortunately, the recognition of this type of dystocia requires great diagnostic skill, and frequently is impossible until the woman has advanced so far in labor that the time has passed for the employment of the ideal method of delivery, and the child succumbs to the makeshift procedure which we are compelled to employ.

Consequently, one of the most important lessons to be learned from this group of cases is that moderate degrees of pelvic contraction are much more serious in white than in black women, and that the most expert skill is required for the recognition of the disproportion and for the choice of the ideal method of delivery.

I have carefully studied the history of each patient in this group in the attempt to ascertain to what extent the fetal mortality might have been diminished or prevented. In the first place, I found that in twenty-five cases outside physicians or midwives had failed to effect delivery and had transferred the patient to the service when the child was already dead or so damaged that it succumbed shortly after birth. Most of these deaths should be attributed to ignorance, and could have been prevented had the patients received skilled care at the proper time. On the other hand, I found an equal number of cases in which the death of the child was due to errors of judgment by myself or my assistants. In a certain proportion of the cases the result must be regarded as "the premium paid to experience," and was due to inexperience on the part of my resident, who either delayed too long before interfering, interfered too soon, or failed to select the ideal procedure for delivery. In other cases the fault was my own. In most instances, however, the error of judgment was unavoidable, and was recognized as such only after the treatment of the patient had been cooly reviewed months or years afterward. Consequently, only a certain proportion of such deaths are really preventable.

On the other hand, in seventy-four cases of the series most rigorous criticism fails to reveal any cause for reproach, and I believe that the deaths were unavoidable when all the factors concerned are taken into consideration. Thus, it would appear that a considerable fetal mortality is inherent to the class of cases under consideration and cannot be avoided.

4. *Various Causes.*—Under this heading are included seventy-nine deaths, 11.2 per cent., due to thirty different accidental complications which were equally divided between the two races. An idea as to their great variability may be gained from Table 2, which includes all conditions which were observed in two or more instances.

TABLE 2.—VARIOUS CAUSES OF DEATH

Cause	No. of Cases
Hemorrhagic diseases	14
Bronchopneumonia	13
Cord infection	6
Strangulation by loops of cord	5
Umbilical hemorrhage	4
Hydramnios	4
Enteritis	4
Gastritis	2
Asphyxia	2
Neglect	2
Cerebral hemorrhage (spontaneous labor)	2
Status lymphaticus	2
Trauma	2
Various conditions, each of which occurred but once	17
Total	79

In other words, fifty of the deaths were due to the seven causes mentioned first, while the remaining twenty-nine were attributable to twenty-three different causes. In general, very few of these deaths could have been prevented, and it is interesting to note that practically one-third were due to hemorrhagic disease or to bronchopneumonia. Furthermore, it should be observed that twelve out of the fourteen cases of the former occurred in negro children, while the incidence of the latter was identical in the two races.

I am unable to state whether or not the remarkable predominance of blacks perishing from hemorrhagic disease has any especial significance, as we are almost completely ignorant concerning its cause.

5. *Prematurity.*—Under this heading I have grouped together fifty deaths occurring in premature children which were born alive but perished during the first week of life, and whose death could not be attributed to syphilis, toxemia or any of the causes enumerated in the table. Autopsy usually revealed no definite cause for the fatal issue, which apparently was due to the inability of the poorly developed child to lead an extra-uterine life.

Cases of this character occurred much more frequently among the blacks, and are attributable in part at least to the lack of care and intelligence which so frequently characterizes that race.

6. *Toxemia.*—The various toxemic conditions were responsible for forty-six deaths, 6.5 per cent., which were equally divided between premature and mature children. Strange to say, white children were involved nearly three times more frequently than black, although it is impossible to adduce a satisfactory explanation for the difference.

The prevention of the development of these conditions is one of the chief aims of prenatal care, and it must be said that the great majority of our cases occurred in women whose pregnancies had not been supervised, but who were seriously ill before entering the service.

7. *Deformities.*—Under this heading are grouped together twenty-four deaths occurring in children which presented congenital deformities which were incompatible with life, or which gave rise to such mechanical obstruction as to lead to their death at the time of labor.

Table 3 gives an idea of their character and incidence.

TABLE 3.—DEATHS FROM CONGENITAL DEFORMITY

Deformity	No. of Cases
Acrania	6
Hydrocephalus	6
Imperforate anus	3
Congenital edema	2
Osteogenesis imperfecta	2
Hemimelus	1
Congenital cystic kidney	1
Achondroplasia	1
Spina bifida	1
Absence of pylorus, situs transversus	1
Total	24

Such deformities are attributable to errors in development occurring within the first few weeks of life following conception, and cannot be prevented. It is interesting to note that three-fourths of them occurred in white children, and were about equally divided between those which were born prematurely and at full term.

8. *Inanition.*—In this category I have collected twenty-three deaths occurring between the seventh and fourteenth days. for which autopsy failed to reveal a satisfactory explanation. As all but four of the children were premature, this group of deaths might have been considered under prematurity, the only point of difference being that death occurred during the second instead of the first week.

9. *Placenta Praevia.*—Under this heading are included twenty-two deaths which were associated with abnormal implantation of the placenta. This condition gives rise to severe hemorrhage, which necessitates the termination of pregnancy, no matter to what period it may have advanced, and is always associated with a high fetal mortality. The children were almost equally divided between premature and mature, but the most interesting feature connected with this group is that only two deaths occurred in colored children. I am unable to advance an explanation for this peculiarity, as *a priori* the condition should occur with equal frequency, and should be attended by approximately the same mortality in the two races.

10. *Premature Separation of the Placenta.*—The partial or complete separation of the normally implanted placenta before the onset of labor constitutes one of the most serious complications of pregnancy, and if complete always leads to the death of the child and frequently to that of the mother. It was responsible for thirteen deaths in our series, which were approximately equally divided between the two races.

11 and 12. *Suffocation and Debility.*—The conditions comprising these two groups occur so infrequently as not to require especial consideration.

EFFECT OF PRENATAL CARE

Having thus reviewed the various causes of fetal death in our series, I shall briefly consider each group from the point of view of prenatal care, and determine as far as possible to what extent its intelligent application might have been effective in reducing early infantile mortality. I am well aware that any such estimate is dependent on the personal attitude of the person making it, and at best can be only approximate. Definite statements cannot be made until numerous series of thousands of cases each have been adduced, in which all of the mothers had been the recipients of intelligent prenatal care. Such statistics are not yet available, and I fear that some time will elapse before they are.

1. *Syphilis.*—I feel that the chief value of this investigation consists in the demonstration that syphilis is the most important single factor concerned in the production of fetal death, certainly when the material includes considerable numbers of negro patients. For this reason it must receive important consideration from those interested in prenatal care and in the reduction of infantile mortality. Unfortunately, it is not an easy task to combat its effects. Mere education in sexual matters will do but little good in the class of patients concerned, as we are dealing with realities and not with utopian theories. What is necessary is to recognize the disease in the mother at the earliest possible moment, and then to subject her to appropriate antisyphilitic treatment in the belief that the drug administered to her will be transmitted to the child and effect its cure.

The treatment is comparatively simple, but the difficulty lies in making the diagnosis. Unfortunately, for our purpose, not more than one-fourth of syphilitic pregnant women present lesions from which a clinical diagnosis can be made, with the result that in three-fourths of the cases the condition is usually unsuspected until a dead-born child is subjected to autopsy, or a living child develops symptoms of hereditary syphilis. Indeed, in a large proportion of our cases the condition would have escaped detection had it not been our custom to examine every placenta microscopically, and to insist on an autopsy wherever feasible.

How can the desired end be effected? I am afraid that ideal results cannot be obtained unless a Wassermann test is made in the early months of pregnancy on every woman applying for obstetric aid. Such a procedure is out of the question on account of its expense, and the best that we can do is to bear the possibility of syphilis constantly in mind, and to teach those engaged in practical work to be always on the lookout for it. This would result in the detection of about one-fourth of the cases, while the other three-fourths would escape.

Fortunately for our problem, the effects of unrecognized maternal syphilis are not limited to the birth of a single dead child or by the development of a single case of hereditary syphilis, but the woman continues to give birth to a succession of dead-born children. Consequently, we should always regard the birth of a dead child with suspicion, and, unless it is perfectly apparent from the history that syphilis was not concerned, the blood should be subjected to the Wassermann test, and in case a positive reaction is obtained the mother should be given appropriate treatment, with the certainty that one-half of the children which are now lost would be saved, and the woman herself put in condition to bear normal children in the future.

This is not the time or the place to enter into a discussion as to the possibility of the paternal transmission of syphilis or the proper treatment of the disease; but enough has been said to demonstrate that ideal prenatal care demands much more than the examination of the urine and instruction as to the desirability of breast feeding, and must include an extensive knowledge of syphilis. For it is only by its recognition and treatment that this important cause of fetal death can be partially eliminated.

2. *Unknown Causes.*—In view of the fact that our knowledge at present is insufficient to permit us to determine the cause of death in this class of cases, nothing can be said of the prospect of immediate improvement by means of prenatal care, except in so far as the detection and treatment of obscure cases of syphilis is concerned. Naturally, future investigations will gradually lead to a decrease in the size of this group, and will open up avenues of prevention which do not now exist.

3. *Dystocia.*—In this group of cases the intelligent application of prenatal care in its broadest sense offers great promise of better results. As has already been indicated, the disasters in this group are in great part due to pelvic abnormalities, or to excessive size or abnormal presentation of the child. Such conditions cannot be detected or remedied by the most intelligent prenatal nurse, and their recognition will be possible only after all women have been educated to go to a competent obstetrician or to a well-regulated obstetric dispensary for a preliminary examination one month before the expected date of confinement.

If abnormalities are found, the woman should enter a hospital for delivery, and the public should be taught to realize that safety is to be found only in ideally organized obstetric hospitals. Too many sins of omission and commission are now covered by the hospital roof, and in many the sense of security is illusory, as the woman may be treated by short-term assistants, who are often less competent than the much-maligned practitioner. These women should not be delivered in their own homes by a doctor or midwife, or even by the outdoor service of the hospital, as their safety and that of their babies depend on the expert service which can be obtained only in a well-regulated hospital. Generally speaking, even in the absence of a recognized abnormality, the history of a dead-born child in a previous labor should always be regarded as an indication for hospital treatment.

It is my belief that at least two-thirds of the fetal deaths due to these factors could be prevented if suitable care were available. On the other hand, greater optimism is not permissible, as, no matter how skilled the medical attention may be, a considerable mortality will always be associated with such cases.

4. *Various Causes.*—As was indicated in the corresponding previous section, the deaths occurring in this group are due to a large number of accidental factors, concerning whose cause and prevention we are in great part ignorant. Consequently, it is not probable that any great diminution can be effected in this group by the means at present available.

5. *Prematurity.*—Prenatal care and instruction offer great possibilities for the diminution in the number of deaths due to this cause. In her visits to the homes of ignorant and overworked women the prenatal nurse can prevent many premature labors by giving instruction in personal hygiene, insisting on rest and abstention from excessive work during the later months of pregnancy, and, where imperfect nutrition is manifest, by putting the woman in touch with appropriate agencies for relief.

It has been established beyond peradventure that one of the most potent causes of premature labor and the birth of poorly developed children consists in overwork and poor nutrition in the last months of pregnancy; and my own observation has demonstrated that the smaller size of the average colored child is dependent on insufficient and unsuitable food, and that a stay of several weeks in the hospital before labor will result in an increase of from 8 to 16 ounces in the size of the children which will then compare favorably with those of white women in comfortable circumstances.

While the state is not yet prepared to follow the example of France and Germany in ensuring the working woman a period of rest during the weeks immediately preceding labor, I am confident that intelligent prenatal care along the lines indicated would soon do away with at least one-half of the deaths due to prematurity.

6. *Toxemia.*—The fact that only forty-six children in our series perished as the result of toxemia indicates that preventive work in our service has resulted in appreciable improvement, as the great majority of deaths occurred in the children of women who had applied for aid only after the disease had become fully established.

For some years the prevention of toxemic conditions has been recognized as one of the main functions of prenatal care and has accomplished great good. Every practitioner knows how difficult it is to induce even intelligent women to send specimens of urine for examination at regular intervals, and that it is practically impossible in the type of women who come to the obstetric dispensary. Consequently, one of the most important functions of the prenatal nurse is to follow up the patients in this regard, and when abnormalities are detected to see that the women enter the hospital for prophylactic or curative treatment.

In my own material I am confident that the mortality from this cause could have been reduced four-fifths had suitable prenatal care been available. At the same time, I think it right to insist that complete abolition of death from this cause is an unattainable dream, as I know from my own experience that patients who have been constantly under ideal supervision occasionally develop and sometimes die from toxemia.

7. *Deformities.*—Under the appropriate heading I indicated that the deformities in question originated during the first weeks of pregnancy, and therefore no diminution in the number of deaths from this cause can be expected from prenatal care. Furthermore, I am inclined to believe that more careful investigation will lead to the recognition of an increasing number of such cases, as is shown by the fact that since completing the tabulations on which this study is based, I have seen two dead babies born which would previously have been classified in the "unknown cause" group, but in which very thorough autopsy demonstrated that death had been due to abnormalities of the nervous system which were incompatible with life and which had originated during the first weeks of development.

8. *Inanition.*—All that can be said of the prevention of death from this cause has already been said under the heading "prematurity."

9. *Placenta Praevia.*—Only a few of the twenty-two deaths from this cause could have been prevented by prenatal care and then only indirectly. Had all of

the women suffering from this abnormality been taught that bleeding during the last months of pregnancy was a serious matter and demanded expert hospital care, it is probable that a considerable number of them and their children might have been saved, instead of being sent to the hospital in a dying condition by doctors or midwives who had attempted to treat them in their own homes.

The greatest hope for improvement in this condition lies in preventive measures, put in operation months or years before the condition develops. In other words, since the causative factor in the production of placenta praevia consists in inflammatory conditions of the lining membrane of the uterus, resulting from infection in previous labors or abortions, the chief means of prevention consists in good obstetric care in preceding labors.

10. *Premature Separation of the Placenta.*—Thirteen fetal deaths were attributable to this cause, but as we are in great part ignorant of the exact mode of production of the accident, it is evident that even the most intelligent prenatal care could not have been effectual in preventing it.

Furthermore, in view of the fact that the complication runs a rapid course and is frequently very difficult of recognition, it is unlikely that the majority of women affected could have been sent to the hospital sufficiently early to have been subjected with any great hope of success to the radical operative procedures which are essential for saving the child; while in many instances it is a matter of congratulation if it is possible even to save the mother.

11 and 12. *Suffocation and Debility.*—These factors in the causation of infantile death occurred so rarely in our series of cases and were so clearly beyond the influence of prenatal care that they do not call for consideration.

Having thus reviewed the causes of fetal death in our series and considered the extent to which they might be decreased by ideal prenatal care, I have indicated in the last column of Table 1 what appears to me to be the proportion of deaths which must be expected and which cannot be appreciably diminished by any means at our disposal.

It would therefore appear that the fetal mortality in our material might have been reduced 40 per cent. had it been possible for all of our patients to have the advantages of the type of prenatal care which I shall briefly sketch, and with the further proviso that they had received practically ideal obstetric care in the hospital. In this event nearly 300 additional children could have been discharged from the service in good condition.

In criticizing our results, it should be borne in mind that our material is of the type which ordinarily applies for aid at a large general hospital, and is less favorable than in many institutions for the reason that nearly one-half of the patients are negroes with scant intelligence and afflicted by contracted pelves and syphilis to an extent in no way approached by white patients. In general, I believe I can fairly assert that the treatment at the time of labor compares favorably with that of other institutions, but on the other hand, I must frankly confess that the care during pregnancy was far from ideal, and until two years ago consisted solely in such supervision as could be afforded in the dispensary to patients who voluntarily obeyed our directions to return at stated intervals for supervision and examination. During the past two years, however, thanks to the cooperation of the "milk fund" nurses and of the children's clinic, conditions have materially improved, and at the present moment the hospital has provided funds to enable us to make a start with efficient prenatal care.

If we have to register a total mortality of 7 per cent., with all the resources of a large hospital and university behind our service, which has been fortunate in being provided with an exceptionally competent nursing and resident staff, it is appalling to contemplate the conditions which must obtain in private practice among the poor and in some institutions which are less favorably situated.

I shall now outline briefly my ideas concerning efficient prenatal care in large cities, and shall consider its relations to other departments of medical and social service work.

I believe that too narrow a view is ordinarily taken of the scope of prenatal care, which is regarded on the one hand almost solely as a means of preventing toxemia, and on the other as a side issue in the propaganda for breast feeding. If ideal results are to be obtained, neither view is correct, and if the consideration of the facts which I have presented has served its purpose it will have convinced you that broad-minded prenatal care has an immense scope and can be carried out effectively only under the auspices of a well-regulated obstetric department which can command the enthusiastic cooperation of carefully trained obstetricians, social service workers and prenatal and outdoor obstetric nurses, and at the same time is in close affiliation with a children's clinic with its corps of organized workers, or at least with a well-conducted milk association. Furthermore, the closest relations must be maintained with the other department of a general hospital, whose resources should be readily available to the mother and children when necessary.

ORGANIZATION OF PRENATAL WORK

In an obstetric department such as I have indicated, the prenatal work should be conducted primarily from the dispensary, which should serve as the portal of entry for all prospective patients irrespective of whether they expect to be treated in the hospital or in their own homes.

The first requisite for such a dispensary is that it should have proper quarters, an ideal personnel and adequate financial support. The purely medical work should be under the direct supervision of the director of the hospital, and should be carried out by medical men who are sufficiently well trained to make a reliable diagnosis. A considerable proportion of them, at least, should be assistants living in the hospital, in order that the work of the indoor and outdoor departments may be satisfactorily coordinated. In addition to the medical assistants, the necessary number of nurses should be in attendance to care for the ordinary needs of the patients, but more important is the requisite number of prenatal nurses. These should be graduate nurses with considerable obstetric experience, who have also had a certain amount of training in social service work, and should receive adequate salaries.

Patients should be encouraged to come to the dispensary as early as possible in pregnancy. After registration, a careful physical examination should be made and its results recorded. This should not be limited to purely obstetric conditions, but should include the entire body, with especial reference to syphilis and tuberculosis, and the condition of the kidneys. At this visit blood should be withdrawn for a Wassermann test, should anything in the physical examination or the previous history of the patient indicate its necessity.

If everything is apparently normal, and the patient desires it, she should be tentatively registered as an outdoor patient, to be eventually delivered in her own home; otherwise, she should be registered as a prospective hospital patient.

In either event she should be instructed to report to the dispensary at stated intervals as long as she remains well, and to bring a specimen of urine at each visit. She should also be given a card containing concise directions concerning the hygiene of pregnancy. and mentioning the important untoward symptoms which might supervene. Should such be noted she should report at once.

At the first visit to the dispensary, the prenatal nurse should arrange to call on the patient at her own home within the week. At this visit she should make a social survey of the surroundings, and determine whether the patient is a proper object for charitable care. If the surroundings are not suitable, the patient should be persuaded to enter the hospital for delivery. The nurse should also amplify the printed directions concerning the hygiene of pregnancy, and impress the woman with the necessity of suckling her baby.

After this initial visit, an important part of the duties of the nurse is to keep track of the patient by means of a card index, and in case she does not return to the dispensary within one week of the appointed time, to visit her again in order to ascertain why she failed to keep the engagement.

Every patient should return to the dispensary for a final examination one month before the expected date of confinement, and the decision as to whether she is to be delivered in the hospital or in her own home will in great part depend on the findings at that time. In the latter event she should be visited again by the prenatal nurse in order to ascertain whether the necessary arrangements have been made for the approaching confinement. Ordinarily, further visits will not be necessary until after the child is born, but a visit should be made just after the student and postpartum nurse cease their visits. This is necessary partly to check up the work of the outdoor service, but principally to put the patient and her baby in touch with the children's clinic with instructions to take the baby to it should necessity arise, and on returning to the hospital the nurse should register the child at the children's clinic or with the "milk fund" nurse so that it can be followed up by the proper agencies.

In the case of patients entering the hospital for delivery, the prenatal nurse's work usually ceases with the visit made one month before delivery, as the subsequent supervision will devolve on the nursing staff of the hospital. On the day before the discharge, the mother and baby should be taken to the children's clinic for registration, so that the baby may be under its supervision for the next year.

Prenatal care does not necessarily end here, as it has to take thought of what may happen in future pregnancies, as well as of the preservation of the general health of the mother. Consequently, when the existence of syphilis is not discovered until after the birth of the child, a mechanism should be developed which will ensure proper treatment, either under the auspices of the obstetric service or in some special department of the hospital. To bring this about without unnecessarily going into details concerning the disease will often require great tact, and will tax the resources of many nurses. Furthermore, when patients are discharged with conditions ultimately requiring operative treatment, but which could not be undertaken during their stay in the lying-in ward, an attempt should be made to see that they ultimately return to the obstetric department or to some other department of the hospital for the necessary operation, both for their own sake and for that of their unborn children.

CONCLUSION

I hope that by this brief outline and by my figures I have been able to make clear how complicated prenatal care is and how inextricably it is connected with the work of the obstetric hospital. It is not merely a matter of a few visits by a nurse to the patient in her own home, but should consist in the coordination of the medical, nursing and social service resources of the hospital in the effort to obtain such treatment and supervision for the mother as will offer the greatest possible guarantee for the safe delivery of a normal child, which can be kept healthy by maternal nursing.

VALUE OF HYDROTHERAPY IN UROLOGY *

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The object of this paper is to call attention to the valuable therapeutic effects which can be secured by a more general and systematic use of hydriatic procedures. It is no new remedy. Hydrotherapy, both internal and external, has been known and employed throughout the ages, but it does not occupy that large sphere of usefulness which its merits justify, because its advantages are not fully appreciated.

Historically we find records of its use in the early literature of Assyria, Egypt and China. It was extensively developed and used by the Greeks and Romans, who originated the hot air and vapor baths. Hippocrates' writings revealed his quite perfect knowledge of the therapeutic action of certain hot and cold applications. His explanation of their physiologic action is strong testimony to his great wisdom, for it agrees in the main with the facts which we hold to-day, that have been established by extensive experimentation.

In every age certain men, as Asclepiad, Kneipp, Pliny, Presnitz and others, have arisen in different places, extolling the great advantage of water as a remedial agent. Empiric as their knowledge must have been, they added their part to our present system, which has been so well established on a rational and scientific basis by the hard work of many scientific men.

Recent studies in immunity have taught us the wonderful inherent power of the blood and blood-

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forming organs in combating infections, and have demonstrated the actual warfare which takes place between the forces of the host and those of the invader. Victory for the host is effected because of the supremacy of its forces over those of the invader. The purpose of any therapeutic remedy should be to assist Nature in her combat by facilitating the circulation and the mobilization of her forces. To be of the greatest value a remedy must not only be directed toward the relief of the symptoms, as pain, but it must at the same time arouse and aid Nature's forces to remove the cause. To accomplish this there is no agent more effective, and whose actions can be more definitely directed, than well-established hydriatic procedures. Not only the amount of blood going to any organ can be definitely increased or diminished, as may be desired, but its character can be improved and altered by the different applications. It is the most potent therapeutic agent known to stimulate the active forces of blood and circulation, proper applications increasing the blood-cells, stimulating their activity, and increasing the blood alkalinity.

Before discussing specific applications it will be valuable to consider a few of the salient principles involved in the action of water on the system, which can be best reviewed by studying: (1) the effects of cold, (2) the effects of heat, and (3) the mechanical or reflex effects.

EFFECTS OF COLD

The primary or intrinsic effect of cold is that of a vital depressant. This is well illustrated by conditions accompanying prolonged exposure to cold. There is slowing of pulse and respirations; the nerves become benumbed; body temperature lowered; and glandular secretions diminished. The degree of effect produced depends on the temperature and duration of exposure. The immediate effect of cold is the depression of activities of the structures in direct contact. The vessels of the skin are contracted, and the blood driven into the larger internal vessels, producing a local anemia and internal hyperemia. If the exposure is of short duration there is a reaction with opposite effects. The skin now glows, and becomes warm. There is a tonic dilatation of surface vessels with resulting hyperemia; increased pulse and respiratory rate, rise of temperature, and stimulated secretions. This phenomenon is due to the reaction or secondary effect of cold which is tonic in nature.

If the exposure to cold is prolonged its depressive effects become more pronounced, and the contraction of surface vessels and the general depression continue. Excessive blood is forced into the deeper organs, as kidneys and other glands, except those of muscular structure. (The contractions of the muscle fibers decrease the size of these organs, and cause an expulsion of their congested blood.) The sensory nerves being subjected to the prolonged exposure of the powerful thermic impulses produced by the cold become exhausted, and the pronounced reaction which follows the short application is not produced, and the primary effect of the cold continues following the application, sometimes for two or more hours.

Effects on Blood.—The effect of cold on the blood is striking. Winternitz reports an increase of 1,860,000 cells after an application of cold. White corpuscles increased up to 300 per cent. Kellogg[1] demonstrated temporary increase of 500,000 red cells, 5,200 white cells and 3 per cent. hemoglobin, following a hot and cold application. Baruch's experiments showed an increase of 1 to 2 per cent. following cold sprays and other applications. Henocque showed that hot and cold applications increased the rate of reduction of oxyhemoglobin. Strasser showed that general cold applications increased the blood alkalinity, increased the amount of urea, uric acid, ammonia, earthy phosphates, and xanthin bases, which demonstrates the powerful stimulating tonic effects of short cold applications. Fleury demonstrated with his experiments with belladonna that intestinal absorption was greatly accelerated by cold application. Short applications of cold increase heat elimination by the reaction following it, favoring perspiration. Prolonged and very cold applications produce congestion of the kidneys, which may continue even to the extent of producing albuminuria. *Cool* (not prolonged very cold) baths decidedly increase the amount and density of urine eliminated. The toxicity of the urine in fever cases, treated by cool baths, has been demonstrated to be increased sixfold. Cold lowers both surface and internal temperature. Fleury records a lowering of body temperature 7 degrees by cold baths. There is a greater change in fever than in normal cases, and it is greatly enhanced by friction. Cold lowers temperature by direct absorption of heat. Prolonged cold applications lessen the power of reaction by exhausting the sensory nerves, and lessen the heat production by exhausting the heat producing centers, so that the temperature may remain lowered for several hours before the body can react and be returned to normal.

PHYSIOLOGIC EFFECT OF HEAT

Heat is a vital stimulant. This is well demonstrated by noticing the vivifying influences of warmth from a fire after prolonged exposure to cold. The effects of heat applied differ with the temperature, duration and mode of application. Currie says that the first effect of moderate heat is to produce a local hyperemia of the tissues by stimulating the vasodilators. While moderate heat relaxes the surface vessels, very hot applications cause a primary contraction of the vessels in the skin. With applications of short duration the vasoconstriction is soon replaced by a vasodilatation and there is a temporary contraction of the internal vessels coincident with the contraction of surface vessels, which is soon followed by a relaxation. This relaxation of the surface vessels, permitting the blood to circulate freely in the skin, is a powerful derivative measure in relieving the congestion of deeper parts. Applications of warm water stimulate the vasodilators, while very hot applications temporarily stimulate the vasoconstrictors.

Experiments have been performed which show the marked effects which the applications of heat have on the vital organs. Winternitz showed that following a hot bath there was a decrease in the blood-cells, a greater reduction being noticed in the whites than in the reds. Strasser showed that general applications increase the acidity of the blood, by increasing the acid-phosphate content. Magiori demonstrated the muscular activity to be greatly reduced by the effect of heat. Kellogg showed that following an immersion bath of 112 degrees for twelve minutes the strength, as determined by the universal dynamometer, dropped from 6,480 pounds to 5,415 pounds, a loss of 1,065 pounds, or 16 per cent. Heat first slows, then increases the pulse, diminishes blood-pressure, increases metabolism by raising the body temperature, thus increasing the elimination of urea. Short applications of heat are nervous excitants. If this stimulating or exciting effect is prolonged it exhausts the stored nervous energy, very much as a continuous contact of the circuit of a dry cell soon exhausts it. Neutral applications are soothing, producing their sedative effects by protecting sensory nerves from external thermic stimulation.

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[1] Kellogg: Rational Hydrotherapy.

REACTION EFFECTS

The phenomena of reaction manifestations following application of heat or cold have been carefully worked out by the experiments of Schuller, Goltz, Naumann and others, who have demonstrated it to take place directly through the nerves. Thermic stimuli producing afferent impulses are carried to the caloric centers, from which efferent impulses are modified and transmitted over the sympathetic, affecting the vasoconstrictors or vasodilators. The reaction effect is opposite from the action and is the result of the efforts of the organism to resist any external interference with the normal temperature. It is well illustrated by the change accompanying a cold bath. The direct action is to chill and blanch the skin by contracting surface vessels, slowing of pulse and respiration, and increasing blood-pressure, whereas the reaction is essentially opposite, reddening and warming of the skin vessels, increased pulse and respiratory rate and general feeling of well being. The primary effect of short heat and reaction from short cold are tonic, while the primary effect of cold and reaction from hot are atonic. The end result of any application depends on the reaction, and to be effective the treatment must be directed with this object in view, and so applied as to obtain it.

REFLEX ACTION

Another important factor in the action of hydriatic measures is reflex action. All the internal organs are reflexly connected with some external surface. This is well illustrated by the perceptible effect on the bladder of applications of cold to the hands or feet, and on the uterus by applications to the breast. These various areas have all been carefully worked out and a knowledge of them is essential in prescribing hydrotherapy. By utilizing them more decided results can be obtained by fluxion effects. For example, hot blanket packs relieve congestion in the kidneys by diverting blood into the skin. An ice bag over the lower third of the sternum, the reflex area for the kidneys, simultaneously applied, doubles the action of the pack by reflexly contracting the vessels of the kidney; thus is produced a pulling and pushing effect.

APPLICATIONS OF SPECIAL VALUE IN UROLOGY

As in every branch of medicine, our treatment must possess a twofold function, one directed to the local condition, the other to the upbuilding of the patient's general resistance. We are apt to be too reliant on our aggressive measures and not sufficiently consider the advantages of increasing the defensive powers of the body. Much can be accomplished in combating local infections by relieving congestion and producing a more active circulation of blood, richer in leukocytes. The local accumulation of toxins is prevented by their being more rapidly carried away to the glands and organs of elimination, thus preventing their inhibitory effect on the phagocytic action of the leukocytes. Frequent applications of short hot and cold, either as fomentations and cold compresses or immersions in alternate hot and cold, constitutes a valuable adjunct to any treatment in combating infections. Cases of acute specific urethritis experience relief and more speedy cure by immersing the organ in alternate hot and cold water several times a day, as an adjunct to regular treatment. Perhaps the most frequently prescribed hydriatic measure by urologists is the sitz. My experience has demonstrated to me that we do not get the results to be obtained from this very valuable measure when proper technic is not followed. The marked analgesic effect of a hot sitz is responsible for our ordering its use so frequently. Patients, when taking their own treatment, find the relief so gratifying that they remain in it too long, which results in an atonic reaction following, that is more or less debilitating to the defensive properties of the blood, and the value of the measure is thus thwarted. When used for its analgesic properties for calculus colic, this relaxed effect is desirable, but not so in combating chronic congestions or infections. The best effect is obtained from a short hot sitz, from 115 to 120 F. for five to eight minutes, followed by a short cold dip or effusion, the reaction of which prolongs the primary tonic effect of the heat, by producing a tonic dilatation of the peripheral vessels, and a more active circulation. A hot sitz should always be followed by a cold sitz when treating chronic infections. For this reason sitz tubs in hospitals and institutions should be arranged in pairs in order to facilitate taking alternate hot and cold applications. In private homes, the effect can be obtained in a measure by gradually cooling the water or dashing cold on the parts from a bucket. In cases of chronic infections, the advantage of such a bath is greatly augmented by preceding it with alternate hot and cold sprays and ascending perineal douches.

I wish particularly to emphasize the value of the prolonged cold sitz. My attention was attracted to its virtue by its extensive use among the gynecologists, who use it so effectively in the palliative treatment of uterine fibroid, with chronic congestion accompanied by menorrhagia. They have demonstrated by experience that the reaction following short cold sitz baths increases the circulation in the uterus, which aggravates the menorrhagia, but prolonged (from twenty to thirty minutes at 60 to 70 F.), produces continued contraction of the pelvic and abdominal viscera, with a relief of congestion following. The prolonged active stimulation of the vasomotors exhausts them, thus losing their power to react, so that the primary effect of the cold is continued after the bath. Much of the benefit derived by the patient from this measure is due to the contraction and tone to relaxed intestinal viscera, which noticeably increases their activity and thus stimulates nutrition and intestinal elimination. This measure has proved very valuable to me in the palliative treatment of prostatic hypertrophies with congestion, malignant growths with hemorrhages, atonic dilated bladders (especially following prostatectomies) and in sexual debility.

Care must be exercised in the beginning of its use. Weak and debilitated patients should not be given the prolonged very cold bath until their ability to react is established, which can be done by gradually from day to day reducing the temperature and extending the time. Thus "tolerance" is established. Reaction can be greatly facilitated by a simultaneous hot foot bath, and especially by vigorous friction to parts immersed. Chilling can be prevented by protection of the shoulders with flannel. The cold sitz should be preceded by a hot rectal irrigation, and followed by a spray. It is positively contra-indicated in all cases of vesical tenesmus.

The neutral sitz, taken with water at 92 to 95 F. for from fifteen to thirty minutes is very valuable, because of its soothing and sedative effect in all irritable conditions, accompanied by priapisms, erotomania, etc.

Another useful measure to me, which can be utilized by patients at home, is the heating pelvic pack. It consists of a piece of linen, flannel and mackintosh, shaped and applied like an infant's napkin. It is used as a heating compress to any other part by wringing the linen out of ice water and applying next to the skin, covered by flannel and mackintosh. Its action is that of a heating pack, producing dilatation of superficial vessels, with relief of internal congestions. It possesses a decided value in the relief of pain and for activating the circulation in cases of cystitis, prostatitis, epididymitis, etc. It is a valuable after-treatment following a sitz or hot fomentation, and is best employed at night. Its ease of application and value commends it to a more general use.

The value of the ice bag, fomentation, pyscrophore, and numerous other local measures of merit can only be mentioned.

General derivative and eliminative measures, as packs and electric light baths, and tonic measures, as hot and cold applications to the spine, salt glows and general hot and cold sprays, deserve special mention. They are valuable in stimulating general vital tone. With their proper use, weak, anemic and debilitated patients, who may be suffering from some condition demanding radical treatment, and unable to stand it, can be built up and prepared for it.

Treatments consisting of combinations of these applications, graduated as the patient's ability to react indicates, are effective in all cases of acute and chronic infections. Patients feel the boost and stimulating effect of each treatment, which gradually increases their natural offensive and defensive powers. Especially in tuberculous infections, used together with proper hygiene, vaccines, etc., suitable tonic hydriatic applications possess especial merit in raising the opsonic index, besides affording most grateful relief of painful symptoms.

Nothing can be more essential to a patient about to have an operation involving the urinary tract, than to have his blood pure and free from toxins and his skin and elimination active, to increase which no measure approaches in value suitable hydriatic applications, and I predict that the time will be when hospitals and all surgical institutions will be equipped to give surgical cases hydriatic training to put the patients in the best possible condition for operation. If more attention is given to the circulation and activity of the skin prior to operation, there will be fewer cases of renal failure following surgical procedures.

The routine use of the hip and leg pack followed by cold-mitten friction after surgical procedures is a valuable measure to abort shock and pulmonary congestions. These are conveniently given by the use of the electric thermaphore pack, which is placed on the bed and the current turned on before the patient returns from the operating room. The patient is thus put at once in a warm pack, which is folded around the legs and hips and heated by the electric current for ten or twelve minutes. A cold-mitten rub completes the treatment.

The technic of these applications is an important feature and essential to their successful results, but the extensiveness of the subject necessitates referring the reader to standard text-books on the subject. If I have succeeded in calling attention to the fact that hydrotherapy is a definite science, that elaborate indications have been developed, which are based on a sound physiologic foundation, and that it is not an empiric measure to be used in a haphazard way, I am thankful and I can assure you that time spent in becoming more acquainted with the great resources of hydrotherapy will place in your hands many useful measures in combating disease.

ABSTRACT OF DISCUSSION

Dr. D. Miller Barr, Atlantic City: I have had a large experience in this direction. In 1883 I had a patient with chronic rheumatism, a tall man, strong, energetic, but I could not control the condition. I at that time opened a sanatorium employing hydriatic appliances. In 1884 I gave this patient a Russian bath every morning and a Turkish bath every evening. In two days he threw away his cane, gained two pounds a day for two weeks, and went home well. I do not know whether you have observed that there are two batteries at work in the system. There is a faradic battery which sends impulses to the muscles and which is subject to the will. Now these muscles must be exercised in order to keep up their strength, and this battery needs rest—eight hours out of every twenty-four. The galvanic battery is that battery which commences before birth and keeps up a continuous action until death. It acts on the heart and lungs and the general organs of the system. It is not subject to the will. I believe we have a definite way of stimulating, exercising and differentiating the work of this galvanic battery, the battery which supplies the organs of the body with vitality. This weakens like any other ordinary battery at times and this method of treatment stimulates it, causes additional vibration and action, and thereby accomplishes the wonderful and desirable effects which are described in the paper.

THE PRACTICAL VALUE OF CHEMICAL TESTS OF RENAL FUNCTION IN SURGICAL CONDITIONS OF THE URINARY TRACT*

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The practical value of an estimation of renal function by means of chemical tests has not as yet been definitely determined. Medical literature during the past decade has been replete with articles concerning this subject. With the advent of each of the various functional tests, it was believed that the means had been discovered whereby an exact estimate of renal function was possible. In 1909 the use of phenolsulphonephthalein as a renal functional test was advanced by Rowntree and Geraghty, who asserted that in its use many of the objectionable features of other tests had been overcome. Since then many articles have appeared, largely corroborative of the assertions of

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* From the Mayo Clinic.

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Rowntree and Geraghty. As a result, the general impression now in this country is that an estimation of renal function by means of chemical tests is necessary before any surgical procedure can safely be made in the urinary tract.

In our experience phenolsulphonephthalein undoubtedly embodies many of the virtues which the various other tests lack. Since phenolsulphonephthalein is also representative of the underlying fallacies common to all functional tests, its use will be illustrative of the practical value of such tests. In an effort to determine its practical value when applied to surgical conditions of the urinary tract, we have employed it in 612 cases. In the review of these tests, they have been studied in regard to their value when applied to the following conditions: 1. For the purpose of determining the efficiency of the remaining kidney. 2. The estimation of renal functional capacity in cases of urinary obstruction. 3. As an aid to the diagnosis of doubtful lesions of the kidney.

In the literature on the subject of renal functional tests the statement is frequently made that the greatest danger in renal surgery is insufficiency of the other kidney. Rowntree, in a recent article, says, "Uremia after operation has been responsible for a large proportion of the mortality in surgical cases." This observation, however, has never been proved by an extensive survey of a large series of operated cases. Of the 485 patients on whom nephrectomy was performed at the Mayo Clinic during the past five years (June 1, 1909, to June 1, 1914), nineteen died as the result of the operation. A review of the post-mortem findings in these cases showed that renal insufficiency was the cause of death in but one case in which a complete cystoscopic examination was made prior to operation. In this patient a nephrectomy had been made for unilateral renal tuberculosis. Although the clinical symptoms prior to operation were suggestive of renal insufficiency, the operation was made for relief of acute pain referred to the affected kidney. In two other cases the remaining kidney was insufficient because of tuberculous infection. Because of difficulties in cystoscopic technic, neither of these kidneys could be catheterized. In one of these cases the combined phenolsulphonephthalein output in two hours was 38 per cent. prior to operation. A review of the necropsy data would lead us to believe that the cause of death following renal surgery will more often be the result of infections and possible errors in surgical technic than of insufficiency of the remaining kidney.

It is a well-known fact that when one kidney is diseased the functional activity of the other kidney may be temporarily reduced. The degree of reduction may be so marked as to suggest an actual lesion. The degree of functional reduction, however, is not necessarily commensurate with the extent of actual destruction of tissue. The fundamental weakness of all renal functional tests as an aid to prognosis is that while they may show the degree of functional activity at the time of examination, one cannot determine from them what the functional capacity may be when the existing pathologic conditions are corrected. It has been our experience that the fundamental surgical principles and the clinical data, including a careful cystoscopic examination, are to be relied on in determining whether or not a patient should be operated on. In other words, if a surgical condition is present in one kidney, operation is indicated provided there is a fair amount of normal urine in the catheterized specimen of the other side and that the patient does not give evidence of the well-known clinical symptoms of renal insufficiency.

URINARY OBSTRUCTION

We have employed the phenolsulphonephthalein test in 168 cases of prostatic hypertrophy. In the majority of cases the test was repeated at regular intervals in order to note the degree of comparative progress. It has been asserted that with a persistent low output of phenolsulphonephthalein in spite of treatment we have evidence of renal insufficiency which would contraindicate operation. While it would probably be impossible to set any arbitrary percentage as the operative danger line, it is generally understood that a 20 per cent. return in two hours might be so regarded. Our series includes eleven patients operated on with an output of less than 20 per cent., all of whom had repeated examinations and long-continued treatment. Of these eleven patients, but one died, evidently from cardiac rather than renal insufficiency. In two patients, even after months of treatment, the return in two hours was so slight as to be scarcely measureable and yet both made uneventful recoveries, one of whom two years afterward is reported in excellent health. On the other hand, two patients with a phenolsulphonephthalein output of 30 and 45 per cent., respectively, after treatment of the bladder died with clinical symptoms of uremia, and several patients with an output of over 40 per cent. prior to operation developed uremic symptoms after prostatectomy but finally recovered.

Two patients, with a phenolsulphonephthalein output of over 75 per cent. in two hours, died following operation. One patient died with clinical evidence of uremia and a pathologic diagnosis of nephritis, largely glomerular, in both kidneys. The other patient died with evident cardiac dilatation, and the pathologic examination of both kidneys showed a chronic parenchymatous nephritis.

It has been asserted that successive tests are necessary to establish the functional capacity and that only when the amount of dye secreted increases progressively is the efficiency of renal function established. In the ten patients operated on with an output of less than 20 per cent., the amount remained practically stationary throughout treatment. In several cases, the secretion had been around 20 per cent. after the first reaction to treatment, then rose to 30 per cent., but dropped to 20 per cent. or even less prior to operation. We have concluded that although the amount secreted usually increases after drainage and treatment of the bladder, a stationary or even decreasing output should not influence the prognosis, provided the patient's general condition is improving.

Of interest is a review of the specific gravity of the urine. While as a general rule a drop in specific gravity was accompanied by a drop in the phenolsulphonephthalein output, there was no certain degree of parallelism between the two tests. Thus of sixty-three patients in whom the phenolsulphonephthalein output was over 50 per cent., in thirty-two the specific gravity remained lower than 1.010. On the other hand, of the eleven cases with less than 20 per cent. phenolsulphonephthalein output, nine had a specific gravity of less than 1.008.

We believe, however, that the clinical evidence of renal insufficiency after the usual course of treatment is of greater importance than any functional tests, and should determine whether or not prostatectomy is indicated. That we are correct in our observation is proved by the fact that recently a series of ninety-seven prostatectomies was performed at the Mayo Clinic without a death.

Probably the greatest value of the functional test will be as an aid to the diagnosis of doubtful lesions of the kidney. For this purpose, phenolsulphonephthalein is admirably adapted. The presence of a marked diminution of dye-secretion on one side should be regarded as indicative of the existence of some pathologic lesion. Its absence, however, will not exclude the possibility of the existence of a lesion. Unfortunately, technical difficulties accompanying ureteral catheterization are frequently the cause of error in the functional estimate, and in order to corroborate the findings it may be necessary that the patient undergo repeated examinations. Slight differences in the functional output between the two kidneys are not of much practical value. To be of much diagnostic significance, the comparative difference in the functional output must be marked. The phenolsulphonephthalein test is frequently of considerable value when applied in the diagnosis of renal lithiasis, ureteral lithiasis, hydronephrosis, renal tumor, renal tuberculosis, renal infection, bilateral cystic kidney, essential hematuria and atrophic kidney.

RENAL STONE

When stone is present in a kidney, a comparative diminution in the functional output will be found in the majority of cases. It will be found in practically every case in which the stone is of considerable size and there is marked destruction of renal tissue. It will frequently happen, however, when the stone is small and when there is little or no infection, that the diminution in secretion will not be enough to be of diagnostic value. Since shadows in the roentgenogram of stones of this type particularly require identification, the practical value of the functional test as an aid to their identification will be found to be limited. The absence of any diminution of dye-secretion, therefore, will not exclude the possibility of a stone being present.

The degree of diminution of the phenolsulphonephthalein output will not be found to be commensurate with the degree of destruction of renal tissue. As a rule, the degree of diminution in functional output will be much greater than the actual destruction of tissue. Thus in several recent cases of stone in the kidney, the functional output of the affected kidney was but 1 or 2 per cent. in fifteen minutes, while in the other kidney it amounted to 10 or 15 per cent. At operation, the affected kidney was found to be practically normal. Following the removal of the stone, the renal function returned to normal. From this it must be inferred that the reflex irritation from stone will frequently be the cause of temporary diminution in renal secretion.

With bilateral nephrolithiasis, the test may be of value in determining the comparative degree of renal obstruction. If but a trace of the dye returns from one kidney, the destruction of tissue has probably progressed to such a degree that nephrectomy usually is indicated—a particularly valuable procedure when the urine is not markedly purulent. In one case, however, of bilateral nephrolithiasis, the same amount of dye was secreted from both sides. At operation, one kidney was found to be so much destroyed that nephrectomy was necessary, while the other was in comparatively good condition. If, with bilateral nephrolithiasis, but a trace of phenolsulphonephthalein is present in the combined urine two hours after injection, the advisability of operation would be questionable. Two such patients came under our observation. In one, operation was refused because of clinical evidence of renal insufficiency and toxemia. The other was operated on and was reported alive six months later.

STONE IN THE URETER

Marked diminution in phenolsulphonephthalein secretion on the side of a doubtful ureteral shadow would indicate that the shadow in question was intraureteral. Unless there is considerable dilatation of the renal pelvis, or infection as a result of stone in the ureter, marked diminution will not usually be found. As with renal lithiasis, stones in the ureter giving doubtful shadows in the roentgenogram are usually small and more often cause but little dilatation or infection in the kidney. Consequently, diagnostic diminution in secretion will be found of practical value in but a small proportion of ureteral stones. An equal comparative function, however, would not exclude the possibility of stone in the ureter. In eight cases of stone in the ureter in which the secretion of the urine was not interfered with and the roentgenographic and cystoscopic evidence was doubtful, positive diminution in comparative secretion was found in two cases.

HYDRONEPHROSIS

With hydronephrosis of any considerable size, a marked diminution of function occurs. This is to be explained partially by the fact that the retained fluid in the sac may dilute the dye secreted to such a degree as to give the impression that the secretion is diminished. It will frequently be quite impossible to remove all the retained fluid by means of the catheter so that the functional test will have but little exact value in estimating the degree of renal destruction. As with lithiasis, the degree of tissue-destruction is not parallel with the degree of diminution of functional output. With a very small hydronephrosis, however, in which a functional test might be of practical value, but little difference in secretion may be found in the two kidneys since the parenchyma is usually but slightly involved.

RENAL TUMOR

When the classical symptoms of hematuria, pain and tumor are present, and a thorough cystoscopic examination is possible, the condition of renal tumor can usually be readily recognized. Renal neoplasm, however, will frequently occur without any urinary symptoms, and examination of the urine catheterized from both kidneys may be found to be normal. In such cases, a marked diminution of the amount of dye secreted by the side in which the tumor in question is situated would suggest its intrarenal nature. In twenty-nine cases of renal neoplasm in which the phenolsulphonephthalein was employed, marked diminution was found in nine. With infected neoplasm, the proportion of kidneys with tumors showing a diminution in secretion would be greater. However, the cystoscopic evidence of infection from the side of the tumor would usually render a diagnostic functional test unnecessary.

ESSENTIAL HEMATURIA

In the fourteen cases of essential hematuria in which the phenolsulphonephthalein test was successfully employed, no marked comparative diminution of dye-secretion from the hemorrhagic kidney was noted. If there is any diminution of dye-secretion in the kidney from which the hemorrhagic urine is secreted, some condition other than the so-called essential hematuria is present and surgical exploration is indicated. The other conditions which may cause hematuria can usually be ascertained by the various other means of investigation at our command. Nevertheless, the method will not infrequently be applicable in the differential diagnosis of hematuria accompanying the following conditions: (1) renal tuberculosis of the hemorrhagic type without other clinical or cystoscopic evidence; (2) renal neoplasm which causes no recognizable tumor; (3) renal stone with negative Roentgen-ray findings, and (4) chronic pyelonephritis. It must, however, be remembered that any one of these conditions may be present even though no marked diminution in function is apparent. The technical difficulties accompanying ureteral catheterization as the result of marked hematuria will frequently render the comparative functional estimate unsatisfactory.

ATROPHIC KIDNEY

The only condition in which an estimate of the secretory capacity of the kidney by means of cystoscopic inspection and ureteral catheterization might be incorrect would be with an atrophic renal condition as Geraghty has demonstrated. Atrophy of the renal substance to a variable degree is not an uncommon condition. In a series of eighty-one kidneys removed at post-mortem and at operation which showed a variable degree of atrophy, Simpson of the Mayo Clinic found that the condition was due to inflammatory changes in practically every case. Atrophy of the kidney which could not be accounted for by secondary inflammatory change was not found in this series. When a cystoscopic examination was made, attention was usually called to the condition by the absence or marked diminution in amount of the secretion or by the gross character of the urine secreted from the affected kidney. In two cases in which a surgical condition was present in one kidney, a clinical diagnosis of insufficiency of the other kidney was made from very apparent clinical evidence of renal insufficiency. This leads us to believe that a condition of atrophy in a kidney to a degree that it will not sustain life, when the only evidence of its existence can be ascertained by demonstrating that but a trace of the injected dye returns, while possible, must be exceedingly rare. With a surgical kidney on one side and a markedly atrophic kidney on the other, the clinical evidence of renal insufficiency alone will usually render the case inoperable. Data ascertained through cystoscopic examination will, with rare exceptions, give us the necessary corroboratory evidence. That we are correct in our premises is proved by the fact that among the 485 cases in which nephrectomy was done, atrophic kidney was never found as the cause of death.

RENAL INFECTION

Geraghty has called our attention to the fact that the phenolsulphonephthalein test is frequently of practical value in differentiating between an infection largely involving the renal pelvis and one which affects the renal parenchyma to a marked degree. Occasionally, an infection with a low functional return will become practically normal after treatment. With bilateral pyelonephritis, however, the phenolsulphonephthalein output will frequently remain practically normal, and still the patient may give unmistakable clinical evidence of renal insufficiency. Two patients were observed with a bilateral colon infection in whom the first phenolsulphonephthalein output in two hours was 13 and 15 per cent., respectively. After treatment, the infection was greatly reduced and, with the improvement of clinical symptoms, the phenolsulphonephthalein increased to 36 and 45 per cent. With bilateral pyelonephritis, a marked diminution in phenolsulphonephthalein secretion from one kidney would indicate considerable destruction of kidney tissue. With hematogenous septic nephritis, marked diminution from the kidney affected should be expected. It was found markedely diminished in one case in which it was tried.

RENAL TUBERCULOSIS

With early tuberculosis where the tubercle bacilli have been demonstrated in the mixed urine and where cystoscopic examination and ureteral catheterization are unable to localize the disease, a marked comparative diminution of phenolsulphonephthalein on one side should localize the disease to that kidney. In one case which came under our observation, however, in which a circumscribed tuberculous process was present in the kidney, the difference in secretion between the two kidneys was practically negative. When because of technical difficulties it is impossible to catheterize only the diseased kidney and the character of the secretion from the other side cannot be determined, as not infrequently happens in a tuberculous bladder, if the combined phenolsulphonephthalein is over 40 per cent., one might usually infer that the other kidney is healthy. We have observed, however, one case of well-advanced bilateral tuberculosis in which the combined phenolsulphonephthalein output was 66 per cent. in two hours. On the other hand, we have noted several cases of unilateral tuberculosis in which the combined phenolsulphonephthalein secretion in two hours was between 25 and 35 per cent. prior to operation. Following nephrectomy, the patients made uneventful and complete recoveries, and in one case the function rose to 60 per cent. three months after operation. It has been declared that the phenolsulphonephthalein test is of considerable value in cases of bilateral tuberculosis when it is impossible to determine from the character of the secretion which of the two kidneys is more diseased. Removal of a tuberculous kidney in bilateral tuberculosis is indicated, as a rule, only when one kidney is practically destroyed and the other slightly involved. It has been our experience that if on cystoscopic examination one is unable to determine from the character of the urine secreted which of the two kidneys is largely destroyed, operation is contra-indicated.

PERINEPHRITIC ABSCESS

Marked comparative reduction in function may be the only evidence present to identify the origin of a mass palpable in the perirenal area. Perinephritic abscess of renal cortical origin may be present without any pathologic evidence in the usual examination of the urine. Marked diminution in secretion of phthalein was noted in two cases of perinephritic abscess where the catheterized urine was negative save for an occasional pus cell. In one case, however, there was no appreciable diminution present. From this it may be inferred that a perinephritic abscess may be of renal origin in spite of equal functional output.

POLYCYSTIC KIDNEY

A marked diminution in phenolsulphonephthalein secretion occurs with polycystic kidneys only when the destruction of renal tissue has advanced to a considerable degree. When the disease is well advanced, clinical evidence of renal insufficiency is usually manifest. In seven cases of polycystic kidney, a phenolsulphonephthalein secretion of less than 40 per cent. occurred in but two cases. In two cases a comparative reduction in phenolsulphonephthalein excretion proved to be of considerable value, however, in determining in which of the two kidneys the greater degree of destruction had taken place. This may not always be ascertained by the comparative amount or character of the urine collected from the individual kidneys.

CONCLUSION

We should like to emphasize that it is not our purpose to belittle Geraghty and Rowntree in their thoroughly scientific efforts to establish a chemical estimate of renal function. The phenolsulphonephthalein test, because of the ease of application and rapidity of secretion, remains as probably the best functional test at our command. Nor is it our purpose to detract from the value of a careful examination of the character of ureteral secretion in surgical conditions of the upper urinary tract. It is our contention, however, that the fundamental surgical principles and clinical data should determine whether or not an operation is indicated; and that renal functional tests are of practical value largely as an aid to differential diagnosis and only to a limited degree as a prognostic aid.

ABSTRACT OF DISCUSSION

Dr. John T. Geraghty, Baltimore: I fully endorse Dr. Braasch's view that functional tests should not be employed to the exclusion of all other methods. The employment of functional tests cannot give us the diagnosis of itself, nor always the prognosis. When taken in conjunction with the data obtained from careful clinical examination, however, they furnish information which is valuable and frequently not obtainable in any other manner. We have never attempted to draw a line beyond which one should not operate, but when we find, in cases of enlarged prostate, a very low renal function as indicated by phthalein, every effort is made by careful preliminary treatment to improve the functional condition of the kidney before operation is undertaken. At the present time we employ two tests; the phthalein for the estimation of the excretory function of the kidney and, when this is found to be very low, an estimation of the blood-urea is also made. When the phthalein is high and the excretory capacity of the kidney good, there is no necessity of doing a blood-urea because this will be practically always normal. Given a patient with a very low phthalein excretion and a high retention of non-protein nitrogen, his condition can be considered critical regardless of the clinical appearance, and such a patient is a bad operative risk. A knowledge of the renal function is of value not only because it enables us to select the most favorable time for operation so far as the kidney condition is concerned, but it frequently influences us in the method of procedure and in the choice of anesthesia.

Dr. B. A. Thomas, Philadelphia: I concur most heartily in what Dr. Geraghty has said. I would also call attention to the fact that we should not blame the functional kidney-tests for errors in surgical practice that may occur and also for not carrying out the best postoperative technic. I have felt for a number of years that the simple total quantitative output by a patient on any particular day was not to be viewed with entire satisfaction with respect to the operability of the case. Consequently I believe that, practically without exception, for the surgeon who wants to get a line on the kidney function, whether bilateral, unilateral or total, the indigocarmin test is a serviceable one and one in which the deductions are immediate (chromo-ureteroscopy), concise and reliable. If, however, it be advisable for any particular reason to supplement chromo-ureteroscopy with more extended observations, I believe that, in order to determine the stability of the kidney function and in order to determine whether or not the patient is gradually improving and reaching an operable condition from one which was inoperable at the time of his admission to the hospital, greater reliance can be placed on the method to which I previously called attention, namely, the index of elimination. The index can be applied not only to indigocarmin, but to any substance used in the capacity of a functional kidney-test. If the kidneys are diseased the onset will be delayed, the amount eliminated in the first hour will be diminished, and consequently the relative output for the succeeding hours will be increased. Therefore, if we compute the index of elimination by a study of the third hour as compared with the first hour, we will arrive at a means by which the stability of the kidney function can be determined, and improvement in the course of the case with respect to operability can be determined. If the output of the third hour equals or exceeds that for the first hour—unless the total amount exceeds 20 per cent. for the three hours—that case must be viewed with concern by the conscientious surgeon, with respect to its operability.

Dr. George G. Smith, Boston: If I understood Dr. Braasch correctly, he said that in certain cases the healthy kidney will have a reduced function because of the toxins from the other. Has Dr. Braasch noted definitely that this occurred in any considerable number of cases? Because in the experience which I have had (a great deal less than his, it is true) I have not seen, or have not recognized it. Whenever I have examined a pair of kidneys, one of which was diseased, I have found that the healthy kidney has had a rather better function than one of two normal kidneys would have, and it has never shown any reduced function because of disease of the other kidney. It is true that its function will increase after the diseased kidney is taken out, but I should not say from my experience that the absolute function, if one might use that term, of the healthy kidney has been reduced by the disease of the other kidney. In interpreting the phthalein test, as with all similar tests, we must remember that the findings indicate simply the condition of the kidney at one particular moment, and that the condition of the kidneys is influenced to a large degree by the condition of the patient. I have in mind a boy who had a calculus pyonephrosis on one side and on the other side a small stone, with a severe infection and pyelonephritis. He was admitted to the hospital from the outpatient department. He first had an intramuscular injection of phthalein. We obtained 18 per cent. in the first hour. He became worse during the night, his temperature went up, and we were not sure of the condition, and on catheterizing the ureters next day we found almost no function from either side. He was operated on the following morning and a bilateral nephrostomy done simply for the purpose of getting kidney drainage. We found that he had a calculus pyonephrosis on the right side and on the left an acute focal suppurative nephritis. The left kidney was apparently going to pieces very quickly, and I think that explains the sudden decrease of the function on that side. This case simply points the moral that this test, like all others, must be interpreted in the light of other facts. The general condition of the patient, the condition of the urine obtained from the kidney, the blood-pressure—all these things must be taken into consideration, and the test must be interpreted with common sense, and not regardless of the other factors in the case.

Dr. William E. Stevens, San Francisco: I would like to ask Dr. Braasch if he used any of the other tests of excretion at the same time that the phthalein test was used. It seems to me that there is a tendency at present to abandon recklessly all other tests in favor of the phthalein. In a rather large number of experiments during the last two years we have found the phloridzin at least of equal value with the phthalein test. They have been applied simultaneously, the phloridzin first, followed by the phthalein. In some cases the phloridzin test has seemed to be of greater value than the phthalein test.

DR. W. F. BRAASCH, Rochester, Minn.: I have occasionally employed methylene blue and indigocarmin as an aid in finding the ureters and have also used it to ascertain approximately the kidney function when we have been unable to catheterize the ureters. The question has been raised whether the healthy kidney increases its function following the removal of the diseased kidney. Although increase in function does not always follow, nevertheless I have observed it repeatedly. Dr. Geraghty and I differ only as to the comparative value of the functional test and the clinical examination, in determining whether or not to operate. It has been our experience, particularly in cases of urinary obstruction, that the clinical evidence is the deciding factor which should determine when the patient is to be operated on. As a result of bladder drainage in the first step of preliminary treatment, the patient will invariably have abundant clinical evidence of renal insufficiency if any such is present. The patient will lose in weight and strength and complain of loss of appetite or nausea and show other clinical symptoms of renal insufficiency. When the clinical symptoms improve, after a variable term of bladder drainage and irrigation, when the patient gains in weight, eats and sleeps well and it is evident that the general vitality is improved, then is the time for operation. Although the preliminary treatment and observation is necessary, the method in which the prostate is removed and the details of the after-care are factors of equal importance in making a successful operation. In other words, clinical observation, the preliminary treatment, the operative technic and the after-care are the factors which bring about a low mortality with prostatectomy, and not reliance on any chemical test of the functional output of the kidneys.

THE TREATMENT OF ADVANCED TYMPANIC DEAFNESS

CLINICAL OBSERVATIONS BEARING ON THE PROBLEMS INVOLVED *

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The title of this paper is clearly open to criticism. Deafness is a symptom and not a disease. To the patient, however, the symptom is the disease, and our treatment is of value to him only in proportion to its influence on audition. Applying the same test, are we as aurists satisfied with our results? Taking as a standard the treatment as outlined in text-books and as practiced in most aural clinics, can we claim as the net result the actual relief of a reasonably large percentage of cases?

While this paper is concerned chiefly with one type of deafness—that is, the deafness of ossicular rigidity—it may not be amiss to mention briefly some of the commoner forms of deafness from other conditions:

1. Deafness due primarily to a lesion of the labyrinth or auditory nerve. Such lesions are fortunately rare as compared with those of tympanic origin. They are not amenable to local treatment.

2. Deafness due to otosclerosis. Whether this lesion is confined to the bony capsule or invades the membranous cochlea, the deafness is not influenced by local treatment.

3. Impairment of hearing due to obstructive lesions of the eustachian tube. Functionally these cases are characterized by moderate impairment of hearing, changing noticeably with external conditions (weather, etc.); and responding favorably and more or less permanently to effective treatment of the nasopharyngeal and tubal lesions.

4. Impairment of hearing due to chronic hypertrophic otitis media. In this lesion the mucous membrane lining the entire tubotympanic tract is thickened and congested. Hearing is improved by rational treatment of the eustachian tubes, but rarely, if ever, regains the normal standard.

I shall not attempt, however, to discuss the types of deafness above defined. They are mentioned chiefly to bring into clearer relief the type of which I wish to speak, namely, the obstinate form of deafness associated with intratympanic fixation of the ossicles. And since an analysis of cases will show nearly all cases of advanced tympanic deafness to fall under this head, their clinical importance must be obvious.

STAPEDIAL FIXATION

Fixation of the stapes may be primary or secondary; that is, primary when due to morbid changes which bind the foot-plate or crura of the stapes directly to the margins of the oval window or niche; or secondary when the stapes, though free within the oval window or niche, is nevertheless immobilized through fixation of the malleus or incus, or both. So far as I have been able to determine, the type of deafness does not vary materially with the particular section of the ossicular chain which is bound within the tympanum, nor with the nature of the mechanical obstacle to free ossicular movement; that is, provided the net result is to prevent transmission of sound waves to or through the foot-plate of the stapes. On the other hand, evidence is not wanting that deafness due to direct stapedial fixation is less influenced by treatment of any kind than is the deafness of same grade and type resulting from checks on ossicular mobility not centered in the fenestro-stapedial joint.

The most characteristic and, so far as local treatment is concerned, the most hopeless type of direct fixation of the stapes is that which occurs in otosclerosis. As the characteristic functional sign of this condition we have Bezold's well-known syndrome, namely, (1) marked diminution of hearing of the lower tones of musical scale; (2) prolonged hearing by bone conduction, and (3) reversed ratio of hearing by air and bone conduction (reversed, or "negative," Rinné). We now know, however, that exactly the same functional reactions must inevitably result from any lesion confined to the conducting mechanism which seriously interferes, either directly or indirectly, with movements of the stapes.

Excluding suppurative lesions, we may mention the following tympanic conditions which not infrequently lead to ossicular rigidity, or fixation:

1. As a result of prolonged subacute exudative inflammation of the tube and tympanum, the tubotympanic mucosa undergoes marked thickening. According to Politzer, the labyrinthine windows are selective regions in which the hypertrophy, or in some cases actual deposition of new connective tissue, is often particularly marked. Theoretically it is conceivable that this process in the region of the oval window may reach a stage causing great reduction of stapedial mobility, later, under treatment or without it, undergoing recession with partial or complete restoration of hearing. This, I am convinced, is a process which explains the considerable and permanent gain in hearing which follows rational treatment in some cases.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914

2. As a result of prolonged tubal catarrh with deflation of the tympanum, permanent contraction of the tensor tympani muscle may react unfavorably on the movements of the stapes by reducing the mobility of the entire ossicular chain.

3. In the course of a chronic or subacute tympanic inflammation of long standing, with occasional acute exacerbations, adhesive bands are formed between the head and crura of the stapes and the walls of the oval niche; or between the head and crura of the stapes and the long arm of the incus. Similar bands may bind the long arm of the incus to the inner tympanic wall or, occurring in the vault, may bind the head of the malleus and body of the incus to the outer bony wall of the attic. According to Shambaugh,[1] these bands may represent folds of normal mucous membrane which, during acute inflammatory change, becoming adherent, are later converted into fibrous bands, these ultimately undergoing strong and permanent contraction.

I have long believed that the presence of a reversed or "negative Rinné" in any case of deafness should be regarded *per se* as evidence of stapedial fixation. In other words, labyrinth and nerve lesions do not as a rule disturb the relation of air and bone conduction; and tympanic changes which do not seriously obstruct the movements of the stapes, do not cause reversal of the ratio between the bone conduction and air conduction of sound waves.

Let us review briefly the routine treatment for this type of deafness as practiced in most aural clinics. Ordinarily, it would be somewhat as follows: The ears are inflated by catheter, the condition of the tubes being carefully noted. If the auscultatory signs show clearly the existence of a condition of tubal catarrh, local applications of astringent drugs to the pharyngeal mouth of the tube are made use of. If tubal obstruction of more obstinate type is found, the eustachian bougie or sound is employed. When the tubes have been restored to a more normal condition, or in any case after a few weeks of treatment, the hearing is retested. Frequently a moderate improvement of hearing is found. With a view of obtaining further functional gain, the patient is ordered to return at regular intervals—once, twice or three times a week, according to the physician's views—and at each séance, whatever else is done or omitted, *the ears are inflated by catheter.*

An experience of years with catheter-inflation has convinced me that the frequent routine use of the catheter *as a means of correcting ossicular rigidity* is based on a false conception of the mechanism involved. The theory on which it is used is, of course, obvious, viz., that the act of inflation moves the drum membrane and with it the ossicles, thereby tending to restore their normal mobility. The beginner in otology is often enthusiastic over the distinct functional gain following a first or second inflation, and is at a loss to explain his failure by the same means to obtain continued and progressive improvement of hearing. The explanation of this phenomenon is that the first few inflations in the case of an individual whose ears have not been under recent treatment often do result in the breaking or at least modifying of small intratympanic adhesions, with consequent improvement of sound transmission. If continued as a routine measure the force of the inflations are exerted more and more in the direction of stretching the drum membrane while exerting progressively less influence on the ossicular chain. Used too frequently or too forcibly, and continued over a considerable period of time, the net result is a disturbance of the tone or balance of the conducting mechansim far outweighing the influence of the comparatively small passive movements of the ossicular chain. There is no question that the victim of chronic middle-ear disease may suffer further permanent disturbance of function as a result of excessive or irrational routine catheter inflation.

The first rational indications of treatment having been carried out, there remains in these cases a variable degree of residual deafness which represents the real problem of the disease.

In referring to a few experiments in the direct examination of the ossicular chain through an incision in the drum membrane, I wish to state most emphatically that this procedure is not advocated as a therapeutic measure for the improvement of hearing. The results, either negative or otherwise, are cited solely for the possible light they may throw on the lesions and the resulting deafness.

EXPERIMENTS

Case 1.—N. W., a boy of 17, first seen in August, 1912, suffered from bilateral deafness for which, during the three years preceding, he had gone from clinic to clinic, the deafness meanwhile becoming progressively worse. When first seen by me, he was so deaf that he found it impossible to obtain work, or at least to retain any position.

Examination.—Both drum membranes were retracted and presented the white, opaque areas usually ascribed to calcareous deposits.

Hearing Tests.—Acoumeter (all metal and somewhat louder than the instrument usually sold), right ear, 3 feet; left ear, 16 inches.

Loud whisper, right, 2 feet, with errors; left, 1 foot with errors.

Lower tone limit, right ear, 60 d.v.; left ear, 128 d.v.

Upper tone limit, slightly lowered in both ears.

Bone conduction, 256 fork, markedly increased in both ears.

Rinné, reversed ratio in both ears.

Weber test, not lateralized.

A noticeable feature in this case was the disproportionate loss of hearing for conversational speech as compared with other functional reactions. On account of this disabling feature of his deafness, I advised him to take up seriously the study of lip reading. This advice was not well received, the patient contending that if nothing could be done to improve his hearing he could not make a living. He was accordingly placed on the usual routine treatment.

In December, 1912, the loud acoumeter[2] was heard as follows: Right ear, 5 feet; left ear, 2 feet. For all practical purposes, however, his hearing was in no way improved, and the patient was deeply despondent. I therefore told him that I would like to investigate the condition of his ossicles through an incision in his drum membrane, but could do so only with the distinct understanding that such a procedure would be altogether experimental. To this proposition he readily agreed.

Surgical Measures.—The instruments, a scalpel-shaped myringotome, blunt hook, and probe with a distal or terminal notch, were especially ordered for this case.

January 8, 1913. The left canal and drumhead were cleaned with alcohol and dried, and a pledget of cotton, dipped in a 10 per cent. solution of phenol (carbolic acid), was placed against the drum membrane and removed after

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[1] Shambaugh: The Journal A. M. A., Sept. 27, 1913, p. 1206.

[2] The acoumeter which I have used in these tests is made entirely of metal, emitting a somewhat louder sound than the usual rubber-encased instrument. In testing the very deaf, such as are referred to in this paper, I have found it convenient to strike the short lever forcibly with my finger, thus eliciting the maximum sound, which again is louder than that produced in the prescribed way. It is in reference to these facts that I have used the term, "loud acoumeter," in this paper.

about two minutes. A nick in the posterior segment, just behind and parallel with the hammer handle, caused little pain and little or no bleeding. A cotton pledget saturated with 10 per cent. solution of cocain was placed in contact with the drum membrane, the head tilted toward the opposite shoulder, and the air in the auditory canal compressed as in the fistula test. Two minutes later, the tympanum was quite anesthetic. The nick in the drum membrane was now extended upward and downward along the posterior margin of the hammer handle. The hook, pointing downward, was next introduced and rotated so as to engage the hammer handle, and slight traction used. So far as any sense of "give" or yielding could be appreciated, the ossicular chain, or at least the malleus, seemed firmly fixed. By gentle traction I could draw the patient's head toward me, and I received the impression that any excessive force would result in fracture of the hammer handle rather than rupture of its ligamentous or fibrous attachments. That no excessive movements of the stapes occurred was shown in this case by absence of nystagmus or of marked disturbance of equilibrium. Several minutes of intermittent traction produced a slight sense of yielding of the hammer handle but no sudden breaking of any adhesion or constricting band that I could appreciate.

Tests immediately after this experiment showed the loud acoumeter to be heard 14 feet, an increase of 12 feet. Hearing for other sound was also increased, the patient himself being sufficiently impressed with the practical nature of the change to request a similar investigation of the right ear. Accordingly, on January 17, the right ear was subjected to the same treatment, with similar results, the hearing distance for the acoumeter being increased from 5 feet to 20 feet.

In the attempt to maintain this result it has been necessary to repeat the manipulation of the ossicles many times in both ears with the following results: In the right ear the hearing distance for acoumeter seems to be stable around 20 feet; in the left ear, it is subject to variations, or relapses, falling at times to 4 feet or less, and going back under treatment to 15 feet. The lower tone limit which was 60 d.v. in the right and 128 d.v. in the left ear, is about 48 d.v. in both ears. In the right ear, which seems to be the least subject to variation, a perforation in the postero-inferior quadrant of the drum membrane seems to be permanent, and this may be a factor in the functional change. Hearing for conversational speech is still very poor though sufficiently improved to enable him to hold a position whereby he earns support.

This case is certainly not cited as a remarkable restoration of hearing, for the patient still has difficulty in interpreting the human voice; and one cannot be sure that the functional gain, so far maintained, may not later be lost. The point I wish particularly to make is that by this method of examination I was able in this case to demonstrate a degree of rigidity involving apparently the entire ossicular chain, for which the usual treatment by inflation, etc., would be not only useless, but irrational and therefore contra-indicated.

CASE 2.—A. S., a girl of 20. Disabling deafness of type characteristic of stapedial fixation, plus physical signs of chronic middle-ear disease. Passive movement of hammer handle by method described in Case 1, showed malleus to be fairly movable. This was followed by a moderate improvement of hearing which, however, was quickly lost, the hearing receding to its previous status. Repetition of this procedure brought the same sequence of events.

Deduction: From the comparatively free mobility of the malleus and its relatively small value in sound transmission, I conclude that this was a case of otosclerosis masked by intercurrent chronic tympanic disease. Passive movement of malleus produced moderate temporary improvement of sound conduction, but in no way influenced the osseous fixation of the foot-plate of the stapes.

The futility of inflation in such a case would seem hardly to require argument.

CASE 3.—This was a typical case of otosclerosis, with Bezold triad syndrome well marked, drum membrane fairly normal in appearance and tubes of normal patency. The deafness was very advanced and the patient had been subjected to much useless treatment.

Passive exercise of the ossicles was tried in this case solely with the purpose of gaining any light which this experiment might throw on such a lesion. As might be expected, it proved practically without influence on audition.

CASE 4.—This case was that of a young woman with extreme deafness. Drum membrane on right side was thin, transparent and retracted giving an unusually clear picture of the oval niche and incudo-stapedial joint. What appeared to be fibrous bands passing from stapes to wall of oval niche seemed to show graphically the nature of the obstacle to sound transmission. A hospital colleague who examined the case with me considered it a particularly favorable case in which to attempt the release of the stapes by the breaking up of the constricting bands. This I attempted to accomplish through forcible passive movements of the malleus. The results as measured by any influence on hearing were absolutely *nil*.

This and the preceding case are cited solely in support of the proposition that there are degrees of direct fixation of the stapes, however produced, which are absolutely uninfluenced by even the most direct and forcible movements of the malleus. Under such conditions the futility of inflation and the usual method of local treatment should be generally recognized.

With regard to the cases of purely tympanic deafness—that is, those to which the popular terms "chronic catarrhal" or "chronic adhesive" are applied—it will be safer to generalize. It would be easy to cite a few cases of spectacular but purely temporary improvement of hearing, but such citations might lead to quite erroneous conclusions.

With reference to the varying character of the impediment to sound conduction, the following brief notes of conditions observed may be of interest: In one case of advanced deafness the malleus, which seemed quite rigid, suddenly yielded under gentle traction as from the rupture of some adhesive process. Coincidently with this, the patient stated that all sounds seemed unusually loud and that sounds now came to him which he had not heard for years, e.g., the friction of his shoe on the floor. Hearing distance for the acoumeter was increased from 3 to 15 feet. I naturally hoped that I had obtained an unusual result for this patient. Even before the drum membrane healed, however, there was a recession of hearing power, the entire gain being soon wiped out. On repeating the experiment, I was rather surprised to find the malleus still freely movable. This time, however, passive movements of the hammer handle did not bring a similar gain.

What occurred in this case I take to have been as follows: My first passive movements broke up simultaneously separate adhesive processes involving the malleus and the incus, or more likely the malleus and the incudo-stapedial joint. Following this, the free mobility of the malleus was maintained, while the adhesive process involving the stapes was quickly reformed; and this after its reestablishment, was no longer influenced by passive movements of the now relatively detached malleus.

In more than one case I have found what seemed a fairly movable malleus, passive movement of which produced an appreciable though comparatively moderate and purely temporary gain in hearing. This condition I interpret as the sign of direct fixation of the stapes within the oval window or niche. This hypothesis, if correct, would support the conclusion that there are grades or types of stapedial fixation which cannot be corrected through *movements transmitted through* the malleus and incus, and for which inflation would be obviously worse than useless.

In other cases in which I could not detect any change in the condition of the ossicular chain as a result of my manipulation of the malleus, there was, nevertheless, a pronounced immediate gain in hearing. In such cases there are two hypotheses which might explain the functional gain, viz., (a) that I had broken or modified existing adhesions so as to allow of better response to sound waves; or (b) that the constringent effect of the cocain on the swollen, or congested, tympanic mucosa may have led to better sound conduction. It is clear that the differentiation of these two influences might easily have been made had I retested the hearing after incision and use of cocain and before my manipulation of the ossicles. Such a differentiation might throw some light on the treatment of certain cases.

To return to the influence of this procedure on hearing: I have in many cases obtained an immediate gain *in hearing quite out of proportion* to what would have been possible by other means. If I were able to report that these functional gains were in general as permanent as they were in some cases spectacular, there is no doubt that we would have a valuable means of treating certain types of deafness. Unfortunately I am obliged to report that the results in most cases were not permanent. There has been no other case in which a functional gain comparable to that reported in Case 1 has been maintained; and the ultimate results have proved too uncertain, and as a whole of too negative a character to justify its mention as a therapeutic measure for the relief of deafness. On the other hand, the very unusual temporary gain obtained in certain cases would seem to indicate most clearly the need of further investigation, by any rational means, of the actual mechanical obstacles to sound transmission. Only along such lines will any real advance be made in the treatment of advanced tympanic deafness.

TREATMENT

Any detailed account of treatment would be as futile and wearisome as it would be out of place before the members of this society. Instead, I shall refer very briefly to certain more or less commonly accepted dogmas, belief in which seems to be based more on frequent assertion and repetition than on the observation of actual facts.

1. In relation to the treatment of the eustachian tubes, there are two time-honored superstitions which should be disposed of. The first is that the passage of a current of air through the tube from the catheter or Politzer bag exerts any permanent therapeutic influence on a chronically diseased tube; and the second is that the use during inflation of medicated vapors—e.g., menthol, ether, iodin, etc.—exerts any alterative and beneficial action on the tubal mucosa. Evidence of the value of either of these agents, so far as chronic tubal lesions are concerned, is wholly wanting.

The minutiae of the treatment of diseased tubes—whether by bougies, sounds, electrolysis, the local use of drugs, etc.—do not call for special discussion here. All have their value in the presence of certain conditions which are recognized by all experienced aurists. Eustachian bougies, while of great value in certain conditions, simply exert pressure the effect of which in many cases is only temporary. If we associate force *with a bougie which is too large for the caliber of the* canal at the isthmus, a laceration of the mucosa may occur giving rise ultimately to an organized annular stricture more intractable than the original tubal lesion.

In my own experience the treatment having the widest scope of usefulness in chronic tubal lesions is the local application of the silver preparations—chiefly argyrol and silver nitrate. *Yankauer's method of first* cocainizing the entire length of the tube and then making direct application of a 25 per cent. or 50 per cent. solution of argyrol, also throughout the length of the tube, gives the best results.

2. *As to the influence of inflation in advanced tympanic deafness:* If a first inflation is followed by an appreciable improvement of hearing, this may be accepted as an indication that the ears should be inflated at short intervals—preferably on alternate days—until the maximum functional gain shall have been reached. In my experience, progressive improvement can rarely, if ever, be carried beyond the third, or possibly the *fourth inflation*. Beyond this, if the inflations are continued at short intervals and over any considerable period of time, there is likely to occur an ultimate recession, or loss, of hearing power, due to a loss of the normal tone or tension of the drum membrane.

I do not mean to suggest that the use of the inflating apparatus should be altogether abandoned; for even after the maximum functional gain from inflation has been obtained, the catheter is still an essential instrument through which to carry out the local treatment of the tube. In other words, the inflating bag may be an essential and useful instrument when used occasionally and gently for the purpose of determining the condition of the tube, or a harmful and dangerous one when regarded as a means of exercising the drum membrane and ossicles by frequent and forcible inflations.

The *subjective phenomena* following inflation are such as render it difficult for either the physician or the patient to differentiate with certainly between the immediate and the ultimate results. In many cases, following inflation, the walls of the membranocartilaginous tube fall again into contact, their congested condition serving to maintain for a time a positive air pressure in the tympanum. While this lasts, the patient experiences the sense of relief and clearer audition dependent on the more normal position of the drum membrane. As soon, however, as the air in the middle ear is absorbed, the drum membrane resumes its retracted position. Frequent or injudicious repetition of inflation brings further abnormal relaxation of the membrane, with more pronounced retraction, and a progressive loss of hearing. The initial results of inflation are sudden and therefore clearly appreciable; the ultimate results of prolonged *routine inflation* are gradual, insidious and therefore difficult to gage.

My own experience and belief are that more of actual and permanent functional gain can be accomplished through treatment directed solely to the *dis-*

eased lining membrane of the eustachian canals than can ever be obtained by routine catheter inflation.

The correction of ossicular rigidity by some form of non-surgical treatment is a problem of which no satisfactory solution has yet been found. "Pneumatic massage" is a term, formerly in more common use than now, applied to passive movements of the drum membrane by means of any instrument producing alternate condensation and rarefaction of the air in the external auditory canal. It has been widely advocated and tried out, and has been found wanting.

I have long believed that exercise of the conducting mechanism, to be effective, should fulfil two conditions, both of which are violated by the usual form of pneumatic massage, viz.: (1) the membrana tensa should be made to execute movements simular to those induced by sound waves; and (2) the number of vibrations per second should bear some definite relation to that note in the musical scale which marks the lower limit of the patient's tone perception.

With patients whose lesions are confined to the tympanum, I have proved experimentally—at least to my own satisfaction—that the ossicular chain may be thrown into more or less vigorous vibration down to and below the estimated lower tone limit by a system of tuning forks properly designed for this purpose. If impressions of sound reach the inner ear chiefly through vibrations of the conducting mechanism in response to sound waves from without, why may we not make use of selected sound waves to exercise the drum membrane and ossicles in just those movements (sounds) for which their mobility is shown to be impaired? If, for example, it be shown by careful testing with small forks (for example, the Hartmann set) that the hearing is impaired, but not actually lost, for a given note, for example, c (128 d.v.), why is it not a rational and logical procedure to exercise the drum membrane and ossicles for that particular tone by means of a larger fork of the same pitch whose greater amplitude of vibration is sufficient to throw the drum membrane into more vigorous vibration?

The tuning forks employed by me were expressly designed for experiments in the exercise of the ossicles. They consist of a set of large unclamped forks, the prongs of which are ¾ inch wide and as nearly as possible of uniform thickness; the variations in pitch being regulated by graduations in the length of the prongs. They produce all the full tones of the musical scale from C-2 (32 double vibrations) to c^2 (512 d.v.), four octaves higher. They present broad, flat surfaces which when set in maximum vibration and held close to the ear, cannot fail to throw the drum membrane and ossicles into more or less vigorous motion. To illustrate their use, let us suppose a case of tympanic deafness in which the lower tone limit has been roughly estimated by means of the Hartmann set of tuning forks. If, for example, the patient can hear Hartmann c^1 fork (256 d.v.) but not the c fork (128 d.v.), the tone perception is further tested by forks representing the intermediate notes of this octave—that is, 240, 213, 192, 170, 160 double vibrations, etc.—until the correct lower tone limit is reached. For testing purposes the forks should be struck with only moderate force and held with the space between the prongs opposite the ear.

Supposing that the lower tone limit is shown by this test to be neither 128 d.v. nor 256 d.v., but the intermediate tone of 160 d.v., this fork and three or four others immediately below it in the musical scale (that is, 144, 128, 120, 107 d.v., etc.) are employed for exercising the drum membrane and ossicles. Using first the highest fork, 160 d.v., it is set in maximum vibration and held with flat surface of the prong close to the ear until no longer heard. This is repeated ten or twelve times. Then the next fork, 144 d.v., is used in the same way and so on through the series of successively lower forks, until one is reached which cannot be heard even momentarily in maximum vibration. Used in this way tones several notes lower will be heard. Letting the ear now rest for one or two minutes, in ceratin cases an appreciable though moderate gain in hearing will be found.

To guard against possible misapprehension, I wish to state clearly the limitations of this procedure. It obviously cannot be expected to break up old or firmly organized adhesion bands within the tympanum. It may, on the other hand, render certain adhesive processes less rigid and to this extent bring about an increase of joint mobility with proportionate functional gain. It is therefore of greater efficacy in moderate than in advanced grades of functional impairment. It should in fairness be spoken of only in comparison with other advocated methods of combating ossicular rigidity. In this light, its advantages may be stated as follows: In theory it is a rational measure in that (1) it calls for no exaggerated excursions of the drumhead or for movements having no relation to the function of sound transmission; and (2) it forces the drum membrane and ossicles to vibrate in response to just those sound waves, or tones, for which their mobility is known to be impaired.

In actual practice the results have varied considerably in different cases, some being aided while others have shown little or no improvement. As offsetting failures, there have been no untoward results.

In the foregoing pages, I have outlined what in my experience have proved the more practically useful measures in advanced tympanic deafness. It is clear that if we are to make practical headway in lifting the handicap under which many of these patients labor, we must ultimately develop our work along other lines and broaden somewhat our conception of the task before us. We must discard the idea that the hearing by the patient of an acoumeter a few inches or a few feet further from his head, while he is still hampered by practical inability to interpret the average conversational voice, represents a practical success. From the patient's view-point it is a failure; and the only consideration which leads him to regard it as of value to him is the fact that he views this somewhat negative result in the light of a milestone marking what he believes to be his progress toward better results, or as an anchor by which he resists the current toward hopeless deafness.

I have during the past two years given a good deal of time to hearing tests, and particularly to an effort to place our tests of hearing for conversational speech on a more exact basis; in a word, to developing a simple qualitative test, or one showing the relative auditory acuity for the various speech components. These studies have led me to somewhat unexpected conclusions in certain directions having, it has seemed to me, a practical bearing on the interpretation or management of certain forms or grades of deafness. They fall too far outside of the scope of this paper to be included here. They may be made the subject of a later report.

58 West Fifty-Sixth Street.

ABSTRACT OF DISCUSSION

Dr. John R. Page, New York: I recall the particularly brilliant result in the case referred to in the paper. I have intended trying the operation and found one case in which I thought it would be well worth while; but the patient asked if there was any danger attached to it and I said that possibly there was, as I recalled a case in which Dr. Kerrison got considerable traumatism or infection that caused considerable alarm, did you not, Dr. Kerrison?

Dr. Kerrison: Yes, I had one case. Many of the cases had physical signs of acute inflammation. In one case there were mastoid symptoms. It is obvious that there is a chance of infection of the tympanum and, of course, it might go on to mastoiditis, but if you are careful in your technic the danger is slight. All the cases have healed quickly.

Dr. George L. Richards, Fall River, Mass.: How did Dr. Kerrison determine that he got movement of the stapes?

Dr. Norval H. Pierce, Chicago: From Dr. Kerrison's preliminary remarks, I gathered that he cut a hole in the membrane to ascertain the mobility of the stapes. That procedure was tried by Schwartze away back in 1872, I think, and it was discarded, first, because one could not ascertain the mobility of the stapes by touching it, and because Bezold proved that he could demonstrate its fixation by functional tests. He showed that the sound waves get into the labyrinth in two ways; up to thirty-six vibrations they are conducted through the stapes by wave vibration; then, the entire ossicular chain vibrates *en masse* and gradually beyond that it passes in by molecular vibration. He proved this by observations on patients during life and observations after death by microscopic examinations. Therefore I do not believe that we should revive this old idea of cutting a hole in the membrane to ascertain the mobility of the stapes. I have operated in the past, some years ago, in quite a number of cases of what we know now to be fixation of the stapes, and I always failed of improvement, and I have had several results that were very distressing; one in which complete facial paralysis occurred and remained permanent. In several others infection of the mastoid occurred; none that required operation but which caused a good deal of worry. It is impossible, I think, to obtain any permanent results by cutting a hole in the membrane and putting a hook around the handle of the malleus to try to work the adhesions loose. One occasionally gets slight improvement, but it passes away as soon as the membrane heals up. I have had pronounced benefit to hearing from ossiculectomy in cases in which the ossicular chain was demonstrably bound down by adhesions between the promontory and the umbo. One case of this type was particularly instructive; Neuman's method of local anesthesia was attempted. When the cocain was injected under the periosteum in the bony canal, I was surprised to see quite an enormous cholesteatomatous mass project out of the rather small opening in the membrana flaccida and it occurred to me that that might be a very good treatment for certain cases of cholesteatoma. The entire epitympanic space was irrigated and emptied. I got no anesthesia, however, in this case, because the fluid was not retained. General anesthesia became necessary. Before proceeding with general anesthesia, and after washing out the cholesteatoma, I tested the hearing and found it considerably improved. The hearing was increased considerably and permanently by the ossiculectomy and the cholesteatoma was cured. She could hear a whisper only within 3 feet before operation; afterward something like 15 feet. I think we should be careful, however, not again to revive a hope that has long since been buried in our otologic experience, namely, that by merely dividing or breaking up adhesions within the tympanic cavity, especially if they are of any considerable extent, we may obtain permanent, considerable improvement.

Dr. W. S. Tomlin, Indianapolis: I have had some slight personal experience along the line given us by Dr. Kerrison, my attention having been called to it by Ruttin in Vienna. He didn't recommend incision of the drum, but devised a hook which I have used in three cases. In one the result was good and in the other two not so satisfactory. I found it necessary to follow up the operation with the more or less standard treatment for chronic catarrhal otitis media. The treatment may be followed out along the lines following the Heath operation. I have been inclined to consider that in a certain proportion of the cases in which Heath gets increased hearing after his operation it may be due to the fact that he is persistently keeping the middle ear dilated and keeping down adhesions following the operation. We are not able to measure the movement of the stapes, but if we can affect the movements of the malleus and the stapes is not bound, it will move in proportion of inverse geometric progression. While these adhesions have been going on the individual may find that he can increase his hearing by blowing his nose, and in one case I found marked distention of the drum membrane from this cause. In it there was increased benefit by a thickening of the drum following the use of irritants. The indications for the procedure are: (1) of course a reduced hearing; (2) negative Rinné without absolute increased bone conduction; (3) markedly better hearing with audition tube; (4) retracted drum with restricted malleolar movement; (5) the other evidences that the stapes is movable. It has not seemed to me indicated in the presence of active inflammatory processes.

Dr. S. MacCuen Smith, Philadelphia: I doubt if Dr. Kerrison can hope to have any permanent results from this procedure. Some years ago I performed a number of operations, following the example of Sexton and others; there was a series of about 168 cases, and they were, with few exceptions, decidedly spectacular in point of immediate improvement. They were also notable, with several exceptions, from the fact that the subsequent loss of hearing was as rapid as would have occurred without operative interference. Following up the cases in later years, I thought they lost their hearing even a little more rapidly than if I had not operated. I am much inclined to adhere to a memorable saying of St. John Roosa, some years ago: After listening to a number of papers on the improvement of hearing in these cases, he said: "They will probably hear when Gabriel blows his horn, but not before."

Dr. P. D. Kerrison, New York: I wish to make it clear that I had no intention of proposing the method of examining the ossicles described in this paper as a new treatment for deafness. A careful reading of my paper will show that there is no ambiguity of statement and therefore no reason for misinterpreting my meaning on this point. I do believe that the usual management and treatment of these patients is unsatisfactory, and that a revision or an analysis of methods and results is therefore desirable. I agree absolutely with Dr. Pierce's remarks on the treatment of otosclerosis, first because they are logical, and secondly, because they are in accord with my own personal experience. It is evident from the discussion that there has been some misunderstanding of the purpose of my paper. This, I think, has been due largely to the haste and necessity for skipping parts in reading. My meaning will be made clear to those who may read my paper when it appears in The Journal.

The Power of Accurate Observation.—By accurate observation we must mean not the mere exercise of the senses, not the mere seeing or hearing, or touching of a thing, with some levity of thinking about it; we must not mean even the keenest use of the eye cultivated in microscopic work, or of the ear-hearing sounds that to the uneducated sense would be inaudible, or the use of the finger with the most refined detective touch. All these higher powers of the sense you must acquire by careful study practice, and you must learn to exercise them all with all the attention with which a strong will can direct and watch them: But even all this, difficult as it is, is only a part of scientific observation. This must include, besides, an habitual constant watchfulness, the taking notice of all the conditions in which objects or events are found; their concurrence, their sequences, their seeming mutual relations, all their variations.—Sir James Paget.

THE RELATION OF THE RHINOPHARYNX TO THE MIDDLE EAR AND MASTOID *

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For about one-sixth of a century it has been my custom to treat the rhinopharynx as the main point in most diseases of the tympanic contents, and supplementary measures have varied only with the introduction of new agents, such as epinephrin, argyrol and hexamethylenamin.

Volumes have been written on the relation of diseases of the nose and nasopharynx to middle-ear disease, but my contention is that every case of acute middle-ear inflammation must spring from a pathologic rhinopharynx, however normal or symptomless it may seem, or may have been previously; and our most effective measures must be directed toward treating the nose and removing the cause of the ear trouble.

The cavities of the temporal bone may be looked on as accessory cavities of the rhinopharynx, which by chance happened to contain the organ of hearing, with its complex and vital surroundings. Thus sheltered, the only gateway for bacterial invasion is the eustachian tube, and if this be guarded, few germs are apt to find entrance by the blood-channels. From time immemorial, the dependence of otitis on acute coryza, and pharyngeal infections—whether tonsillitis, diphtheria or the exanthems—has been recognized, and for a generation or more its association with adenoids and grip has been known; but the latent infections from the rhinopharynx, where none of the preceding conditions have been manifest, are only now being recognized. In his recent text-book, Kerrison says he believes that "more cases of acute otitis media result from a simple nasopharyngitis, acting on an individual in whom strongly predisposing conditions exist, than can be traced to all other exciting causes combined." Likewise, in his presidential address before the American Laryngological Society last year, Dr. Leland says: "And since the ear is also an accessory cavity, nine-tenths of whose diseases originate in the mucous membrane of the nose and nasopharynx, etc."

Admitting, as all must, this etiologic relation, what advantage has been taken of it in treatment by the universally taught and practiced methods? If some operation is needed in the throat or nose, we are advised to do it; but opinion is divided as to the advisability of doing operations in acute otitis. Quoting further from Dr. Leland, he "removes adenoids, including Rosenmüller's fossae, during acute stage, to deplete the tissues, thus often obviating the necessity of lancing the drum." Personally, I prefer doing any operation of this character during a quiescent stage, for the purpose of preventing recurrences.

But how about the much more numerous cases in which no operation is indicated? We are told to keep the nares and rhinopharynx washed out or sprayed with mild, unirritating alkaline fluids, to which may be added sufficient phenol (carbolic acid), menthol or essential oil to give a smell suggesting "medicated." In my belief these sprays wash out only a small percentage of germs, and do not make it sufficiently disagreeable to others to cause them to move out. In the plan to be advocated, there is no call for Dobell's solution with its varied formulas, or liquor antisepticus alkalinus, or any of the sweet-scented or pink-tinted proprietaries. As will be set forth further on, this relation of the rhinopharynx to the middle ear applies equally to subacute and chronic cases, and in a measure to chronic suppurative cases also. The number of cases on which conclusions are based could probably be designated with three figures; but I believes these conclusions will be sustained by trial in other hands.

In all cases, whether acute, subacute or chronic, and regardless of the specific cause, the rhinopharynx is mopped, or rather forcibly scrubbed out, with a mixture of phenol, tincture of iodin and glycerin, to which camphor and menthol have been added, of sufficient strength to set up a violent reaction, with painful sore throat, lasting from part of a day to several days. Patients rapidly become accustomed to the effect, so that after half a dozen applications this treatment causes only a passing discomfort. Adults and children are given the same treatment, though in infants under three years old the mixture is weakened. When compressed air is available, self-restraining patients have the nostrils sprayed with a camphor-menthol-iodinized oil; otherwise it is swabbed through the lower meatus on each side, and back to the upper throat on cotton carriers, and the strength is decidedly more.

My two formulas are, first: Fifteen grains each of camphor and menthol are rubbed to a liquid; then 1 dram of compound tincture of iodin, 2 drams of alcohol, and glycerin to make 1 ounce are added. This I call camphor-menthol compound. For spraying it is diluted with nine volumes of hydrocarbon refined oil. Practically this same formula, flavored with cinnamon oil, has been on the market for several years ready mixed under a copyrighted name.

The second formula is 1 part phenol, 1 part tincture of iodin saturated with potassium iodid, and 2 parts glycerin. This is the iodin and acid carbolic compound which I designate I. & A. C. Co.

For swabbing, a fair sized cotton mop is fixed in a strong curved Sims carrier, which is made of nickeled spring brass, or the Ayres modification, made of steel, dipped first in the I. & A. C. Co., squeezed against the bottle neck to remove excess; then dipped in the C. M. Co. and rubbed against bottle neck only sufficiently to prevent dripping. It is quickly thrust behind the palate until it strikes the vault of the pharynx, and then forcibly rubbed from side to side, unless the palate muscles prevent moving it, in which case it is forcibly pressed where it rests. I consider it important to use force in this procedure, as though it were intended to lift the patient bodily on the instrument; hence the need of a heavy stout instrument, and not a bent wire, or other device not permitting great force.

In the painful stage of acute inflammation, or in the acute catarrhal stage without pain, the nostrils are sprayed or swabbed with a few drops of a 2 to 4 per cent. solution of some local anesthetic, and from ½ to 1 drop of 1 : 1,000 epinephrin. This not only contracts the vessels, but it is believed that the sedative effect of the anesthetic on the sensory nasal nerves exerts a beneficial influence on the vasomotor nerves supplying the inflamed areas; this is then followed by the C. M. Co. to the nose, and the I. & A. C. Co. to the rhinopharynx. This treatment is made only once in twenty-four hours, and the patient is not given any nasal spray or throat wash whatever. The only local meas-

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ure for home use is the hot-water bottle. If the tongue is coated, a good dose of calomel, followed by salts is ordered; if not coated, the salts only. Since the announcement that the formaldehyd-liberating drugs are eliminated by all the mucous and serous secretions as well as by the urine has been accepted as fact, patients in the acute stages have been put on regular doses of hexamethylenamin. Physiologic chemists assert that formaldehyd is liberated only in acid mediums, but there may be other explanations than the liberation of formaldehyd, of good resulting from this medication.

Several years ago, a formula appeared in some British publication, of a local anesthetic for the inflamed drum membrane, claiming to make lancing the drum painless. I tried it for that purpose, but it was a disappointment. However, I found it to be a most excellent local application, and gradually I have done away with lancing the membrane, so that I no longer make a free incision in the drum first thing, a thing very hard to do properly except under general anesthesia. This preparation is made by dissolving epinephrin (adrenalin chloride, P., D. & Co.) in anilin, 1:1,000, and then making a 10 per cent. solution of cocain in this. Anilin, so-called anilin oil, is a poison, but just how toxic I have never been able to learn; but I have used it in very small quantities, and have not as yet observed signs of anilin poisoning, designated as coal-tar poisoning, as exemplified in overdoses of acetanilid by depression of circulation, blueness of lips, extremities, etc. These symptoms have occurred from absorption when acetanilid was used even as a dusting powder on raw surfaces. Anilin is used in large quantities in shoe-blacking and printers' inks, but only meager reports of harmful effects from handling them have been accessible to me. The reason for the anilin is that it will penetrate dermal membrane, of which the outer surface of the drum consists, softening it to permit the penetration of the epinephrin and cocain, which localize the inflammation to the tympanum. In the course of a few hours, rarely exceeding twelve, there is an abatement of severe pain, and usually inside of twenty-four hours, its entire annulment. In a fair proportion of cases suppuration is entirely aborted; in others, even while fever continues, the pain will disappear, the redness and bulging of the drum diminish, and the impression is created that the suppuration has aborted. Then the drum develops a small perforation and discharges a secretion, mucoid rather than purulent, which ceases in a few days.

The mode of application is to have a loosely twisted swab longer than the auditory meatus, moisten the tip with not more than 1 drop for a child, or 2 drops for an adult, carry it down to the drum, withdraw the wire carrier by a rotary motion, reverse to its winding, and crowd the excess of length into the meatus to bring a slight pressure against the drum, and retain in place; then fill the concha with extra cotton. This is done only once in twenty-four hours, during the painful stage, and one or two days longer. It requires about three days for these plugs to have all the medicament absorbed from them, when left indefinitely in a dry ear.

The result of these combined measures is to localize the inflammation in the tympanic cavity. If there be fluids or secretions which do not drain out through the eustachian tube, which in my opinion they usually do, the anilin will have softened the drum by maceration, and a nice round little perforation, usually the size of a big pin-head, will open in the lower segment of the tympanum, and stay open as long as it is needed, and then promptly close, thus behaving better than incisions which sometimes heal before their work is done. As soon as the painful stage has been passed, one or two days, swabs after the manner described are wet at their ends only with a 25 per cent. solution of argyrol, and left in the ears against the perforation, filling the canal's full length, to act both as a medicament and a drain, and are changed daily for a few times, then at increasing intervals as recovery progresses. Cases which at the beginning present no mastoid tenderness rarely develop any, and the period of discharge does not exceed one week. When there is already mastoid tenderness of only a day or two's duration, it abates usually in two or three days, and the suppuration within two weeks. When the ear has abscessed more than a week or two previously, and the patient has the accepted symptoms of mastoid abscess, it may require nearly a month to heal in patients who finally recover. After the acute stage has passed by a week or more, inflation by the Politzer method is usually added, but I do not believe this to be necessary, as good results are obtained without it. There is steady improvement in hearing, but not so obvious to the patient as a sudden improvement by inflation, which, however, only shows that the integrity of the ventilating system is being restored, and the improvement comes from this restoration, whether inflation be used or not. During the painful stage, patients are instructed to clear their heads and throats by hawking and suction, and not by blowing the nose, which blowing sometimes inflates the tympanum, causing great pain, and also probably driving secretions back into the mastoid. Not a drop of water is ever used in the meatus, and the perfect recovery of these individuals with healed drum, full hearing and no tinnitus is anticipated with just as much confidence as we expect an eye to recover from a properly treated iritis.

For some time it was with feelings of apprehension, and almost of guilt, that medical treatment was persisted with in cases presenting clearly the indications for surgical measures as all authorities give them.

One of the things of first importance in treating almost all acute febrile diseases is putting the patients to bed, or at least keeping them in a warm room; and yet owing to environment it was necessary for me to treat a large proportion of acute ear cases as office patients, some coming considerable distances from surrounding communities, and mostly during the cold months of the year. This necessity is regrettable, but the fact that patients recovered in spite of it adds confidence to the merits of the treatment.

The more recent the mastoiditis, the quicker it yields to treatment, but in quite a number of instances where discharge and constant boring pain have been present for days or weeks, with fever, septic look, sagging posterior wall, tender mastoid, sometimes swollen or with cervical cellulitis, discharge profusely purulent, at times blood-stained, or in chronic quiescent suppurative cases which have flared up with the foregoing picture, the cases have been brought to a favorable issue. Some of the old chronic suppurations have not only quieted down, but had regeneration of drum membrane to the point of closure, and sometimes restoration of hearing previously impaired.

A measure which may have an attractive future has occasionally been resorted to in the most urgent cases for seven or eight years past, the principle of which was based on subconjunctival injections in the eye, with which my experience has been most happy. One-half dram or more of mercuric cyanid, sometimes with a little morphin, was injected, in strengths varying from 1:500 to 1:1,500, under the periosteum over the tender mastoid; quinin and urea hydrochlorid has been used instead of the morphin, and a weak solution of ichthyol instead of mercuric cyanid. So far, the relief of pain and inflammation has been most gratifying and speedy, although the same type of swelling results as follows the injections in the eye. This produces an enormous outflow of protective lymph or serum into the tissues, which in the battle against disease, Sir Almroth Wright compares to a nation's marshaling all its forces at once, and not sending them against an enemy in small detachments. The infiltration subsides in a few days, feeling after it begins to soften as though under the skin was a bag full of pus. So far, no patient has been given over a single injection, and the usual routine of swabbing the rhinopharynx, and draining the ears has been pursued. The two following cases are illustrations of the injection:

Case 1.—Eliza J., aged 35, reported on Nov. 30, 1913, with severe pain in the right ear which had been operated on in Washington several years before by a prominent aurist. There was a deep fissure along the line of the mastoid wound, and the ear-drum was hard to see by reason of swelling and crookedness of the canal. There were fever, rapid pulse, loss of appetite and sleep, and tenderness of tip of mastoid and antrum. These symptoms did not yield to treatment, but increased. The covering of the mastoid became red, swollen and brawny, obliterating the sulcus of old operation, the neck was stiff, pains incessant day and night, fever continuous. The patient was fast losing strength, looked profoundly septic. December 3, an injection of mercuric cyanid with morphin and quinin and urea hydrochlorid was made about noon, and before evening the pain was entirely gone. The patient began to sleep sound, appetite returned, and pulse, temperature and complexion soon became normal. The ear had a slight discharge, which ceased by December 17. A small opening occurred at needle puncture, from which serum discharged for several days. Hearing is restored to normal.

Case 2.—Floyd B., aged 15, reported March 4, 1914. One month previously he had severe earache for two days and nights, followed by subsidence of pain, and discharge lasting several days. After about two weeks the ear began to pain, destroying appetite and sleep, and after three or four days a swelling appeared over the mastoid causing some cellulitis, and pushing auricle forward, in which condition he was when first seen. There were fever, dizziness, rapid pulse and pale, septic appearance. There had been no discharge with the last attack, and the swelling in the meatus prevented sight of the drum. There was marked nystagmus when looking toward opposite ear. It was thought this might be a case of suppurative periostitis. A fine aspirating needle was introduced to the mastoid cortex, and several drops of thick pus were withdrawn. Injection was then made of a dilute solution of ichthyol, which required much force to insert at first, but suddenly the last portion of about 5 c.c. went in without resistance, and it was noticed running out at the nose, thus proving the connection with mastoid cells, either from carious perforation or natural fissure, as in some cases recently reported by Luc. Between early afternoon and evening all pain disappeared, the boy slept soundly for the first time in a week, appetite and color returned, and he came daily as an office patient for treatment of rhinopharynx, etc. To the usual treatment, vacuum suction through the nose was added. For several days he hawked profusely a discharge from the throat, dark-tinged by the ichthyol, and tasting of that drug showing that the mastoid was draining through the eustachian tube. The boggy swelling over mastoid and tallowy infiltration in neck gradually declined, during a week, and he did not have another twinge of pain. The drum when seen was intact, and no discharge appeared from it at any time. The spontaneous nystagmus soon left, but was marked from turning. Hearing is perfectly normal; no tinnitus.

In acute and subacute catarrhal deafness, the same treatment of nose and rhinopharynx is applied, plus inflations by the Politzer method. The restoration of hearing follows in direct proportion to the duration of the trouble previous to beginning treatments, which should be continued at increasing intervals until the maximum of hearing is reached and maintained. It is my belief that the maximum should equal in adults the best it has been within six months previous, and in children in twelve months previous.

In long-established chronic catarrhal otitis media, the limit of prognosis is to prevent further deafness, not claiming to restore lost hearing, or to relieve tinnitus. As a matter of fact, a fair proportion of patients do eventually improve in hearing, and have diminution of tinnitus, or its entire abatement, except when the patient has colds. The longer the disease has existed, the longer this improvement is delayed in showing. Sometimes, after a long course of treatment it will jump up as suddenly as a "jack-in-a-box," but oftener it is six months or a year or more after the treatment has been finished that improvement is first demonstrated, and it may continue to do so for several years following.

In the belief that artificial ventilation of the ear is a matter of minor importance, the eustachian catheter is seldom employed, dependence being placed on the Politzer method. All patients are warned against taking any quinin, salicylates, or salicylate substitutes, such as aspirin, all of which I believe to be detrimental to hearing which has been severely impaired. Several relapses, some irreparable, have been observed from the knowing or ignorant use of these drugs. One patient with acute otitis with mastoid suppuration had a concurrent attack of acute rheumatism in the foot, for which his family physician gave the usual salicylate treatment. The man recovered perfectly from the suppuration, but the ear was hopelessly deafened, and has so remained for several years.

The course of treatment for the chronic cases should represent the equivalent of twice a week for three or four months. Whether this chronic middle-ear disease is due to a low-grade bacterial infection, or toxemia, or something else undefined, surpasses my ken; but if due to low-grade infection ascending through the tube, we are hitting at its source in treating the rhinopharynx.

Cases of almost life-long tympanic suppuration have sometimes stopped from a few throat-swabbings, when aural treatment alone had not been able to bring this about; so that in addition to the routine treatment of chronic suppuration through the canal, the treatment of the rhinopharynx and nares is regularly carried out. This in all probability prevents reinfections through the tubes and brings the same results as are claimed by Yankauer's method of closing them.

First National Bank Building.

ABSTRACT OF DISCUSSION

Dr. Oscar Wilkinson, Washington, D. C.: I would protest against intranasal or postnasal operative procedures during acute otitis. On two occasions I had bad results from operating on patients who were brought in from the country and insisted on operation. In the first, a double otitis media followed removal of the tonsils and adenoids in a child that had a cold of one day's duration. In another case, I operated on the tonsils in a patient who had a cold and a peritonsillar abscess developed on the third day. I attributed both of these infections to operating during an acute inflammation.

Dr. John J. Sullivan, Scranton, Pa.: I disapprove of the methods advocated by Dr. Jones and would mention the case of a man in Scranton who, following this course, has recently had a case in which a double mastoiditis requiring operation resulted.

THE ORIGIN OF LABYRINTHINE REST-TONE *

EDMUND P. FOWLER, M.D.
NEW YORK

I purpose to account for the origin of the tonus which I believe emanates from every functionating static labyrinth, and which in action and in rest assists to orient us in space.

It can be shown that the otolith organs contribute their share toward rest-tonus, besides assisting in determining positions and motions in space both rectilinear and curvilinear. It is known that influences from many other sources aid the labyrinth in its work, but at this time I will ignore all these, as I desire to concentrate the argument on the semicircular canals.

The semicircular canals are so placed relative to each other and to the utricle, in both temporal bones, that endolymph flow cannot normally occur in one canal without influencing the flow in the other two.

Barany[1] has shown that all three ampullae of both labyrinths are in relation with all six eye-muscles of both eyes, and that we can account for the simultaneous contraction of one set of eye-muscles, and the relaxation of another set, due to peripheral stimulations causing nystagmus, only provided there exists a rest-tonus in the cristae of the canals.

Nystagmus is not necessarily more truly horizontal, or truly rotatory when the external or the superior canals are respectively exactly in the plane of rotation; nor as I have observed necessarily truly in the plane of the canal enduring maximum caloric excitations. Moreover, the position to obtain a given nystagmus varies in different people.

It follows that the character of all nystagmus is dependent on certain combinations of ampullae stimulations (+ or —), and that normally one ampulla never alone determines orientation phenomena.

Shambaugh[2] has demonstrated on a fistula patient, that the: "duration of nystagmus = duration of peripheral stimulation = duration of endolymph current." He concludes that this eliminates the necessity for tonus centers to control the duration of nystagmus, and that it is a potent argument for the origin of labyrinth tonus from the hair-cells of the cristae. From Ewald's and caloric experiments, it also appears that Shambaugh's conclusions are correct. Ewald obtained a greater reaction with flows toward the horizontal ampulla, than with those away from it, and in the vertical canals, greater reactions with flows away from the ampullae.

These facts suggested to me an explanation of the origin of rest-tone, and of many phenomena intimately connected therewith.

In passing, please note that in Ewald's experiment, the opposite labyrinth was functionating, whereas in Shambaugh's the opposite labyrinth was destroyed. This circumstance may partly account for the differences in the amount of reaction obtained between to-and-fro currents in Ewald's, and the lack of marked differences in the reaction from such current in Shambaugh's experiment.

From the foregoing I deduce the following:

1. Physiologic endolymph movements excite impulses from the end-organs, which are interpreted as sensation complexes from all the ampullae. If the impulses from the two labyrinths approximately balance (or through practice are balanced by the aid of the coordinating apparatus), no sensation of movement is experienced. Binaural galvanic or caloric reactions with the head anywhere in the anteroposterior vertical plane demonstrate this clearly, as does the rotation of bilaterally non-functionating labyrinths.
2. The body normally receives a sensation-complex (and a tonus) in the anteroposterior vertical plane, approximately equal from its two sides, but in all other positions, various complexes (toni) must be forthcoming, depending mainly on the position of the head. Any other assumption would not account for balance phenomena observed in the various positions of the body.
3. Labyrinth tonus originates from all the labyrinth end-organs. Postdestruction phenomena also prove this to be true.
4. Endolymph stress is amply capable of maintaining static control in rest, as it does so in action.
5. Positive endolymph stress, within the canals at rest, can occur only because of convection currents ever present therein. I have shown elsewhere[3] that convection currents may be caused by disease, and I shall attempt here to explain their occurrence in health, in one or two ways:

1. By a difference in temperature between the inner and outer labyrinth walls. This may be stimulated by binaural caloric irrigations. Under this influence, the moment the head is moved from the anteroposterior vertical plane, there arise marked unbalance phenomena, due to the placing of the canals in one side of the head more nearly in the optimum, and those within the other side of the head more nearly in the pessimum position for caloric reactions. This theory of thermic differences is therefore improbable, in health.
2. By a constant, but variable difference between the temperatures within the ampullae and the non-ampullated portions of the canals. Is such a difference possible?

The temperature of the brain is normally higher than the blood supplying it,[4] and blood-vessels coming from within the cranium contain blood of a higher temperature than do those from without. The internal auditory artery, a branch of the basilar, traverses the inside of the skull before it distributes its blood-heat to the ampullae of the semicircular canals. This heat is transmitted mainly by conduction and radiation to the ampullae, and as the tiny twigs lie along the concavity of the canals, these receive less and less heat the further the vessel courses from its source.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Barany: Ninth Internat. Otol. Cong., 1912.

[2] Shambaugh: Ninth Internat. Otol. Cong., 1912.

[3] Fowler, E. P.: The Effect of Local Autogenous Temperature Variations, Laryngoscope, March, 1914.

[4] Foster, M.: Physiology, p. 477.

Because of the heat, the specific gravity of the endolymph adjacent to the ampullae is lowered, and within every canal not in the horizontal plane a current is impelled by the force of gravity which establishes, and maintains, a stress on the cupulae of all the canals, at all times.

The specific heat of the spongy labyrinth capsule is 0.71, whereas that of the compact inner labyrinth walls is 0.3, which indicates that whereas protection from the sudden external variations in temperature is provided, changed temperature gradients arising from internal heat variations are quickly established. Moreover, the temperature gradients from the ampullae are more abrupt than would otherwise obtain, because the conductivity for heat of the hard bony canal walls is better than that of the surrounding tissues, and it seems as though the temperature within the ampullae would always be higher than the temperatures elsewhere in the canals, because of these facts and because the blood-supply of the outer labyrinth capsule is derived mainly from the tympanic and other vessels, most of which have not traversed the inside of the cranium, and which must contain, in consequence, blood of a lower temperature than the ampullae vessels, and furnish the principal means of heat dissipation for the static labyrinth and its contents. It follows that the endolymph rest-currents will vary directly as the velocities and amounts of the local blood-supply.

If both labyrinths be normal, and the head is inclined in various directions, why do we not, under these conditions, get an unbalance similar to that experienced during binaural caloric irrigation with the head in any but the anteroposterior vertical plane? At first sight it would appear difficult to fathom this mystery.

If normally there exists constant stress from connection currents within the membranous canals, these currents, owing to the position of the canals as regards the horizontal, in all animals, will be during the greater part of life in the following directions:

In the superior canal, toward non-ampullated end, therefore in + stimulation direction.

In the posterior canal, toward non-ampullated end, therefore in + stimulation direction, aided by superior canal flow.

In the horizontal canal, toward ampullated end, in + stimulation direction, aided by superior canal flow.

Note that the flow in all the canals is in the + stimulation direction. I designate the endolymph pressures and flows, + or —, depending on their direction, in, or not in, the direction of greater ampullae stimulation.

The difference between the direction of + stimulation flows in the horizontal and vertical canals may be explained on the theory that end-organs in the habit of furnishing a tonus derived from endolymph flows in fairly constant directions would only respond to such flows, or at least respond to such flows more readily than to absence of, or to minus flows, in either of which latter eventualities relaxation of the usual tension on the hair-cells of the cristae would occur. In many positions of the head, the endolymph convection currents will be reversed in some canals, in others augmented or retarded. Thus untold numbers of flow combinations and a like number of tonus (stimulation) complexes are brought about and in any and every position of the body and head in space a definite suitable rest-tonus is provided for balance and orientation.

The fistula, galvanic, rotation and caloric experiments are all grossly abnormal, and really demonstrate but little except when positive, but a study of these tests reveals nothing incompatible with the theory of convection current control which I have advanced.

Long ago E. Cyon[5] observed that the obstruction by division of one or more of the canals caused transient effects, provided it was not bilateral and unsymmetrical. This can be accounted for only by assuming the presence of a rest-tonus from the cristae, due to constant endolymph stress. The unsymmetrical bilateral nullification of endolymph flow would naturally be more difficult of recoordination, than symmetrical or unilateral nullifications. Caloric experiments also support this contention.

I have observed spontaneous nystagmus which with the vertigo, was distinctly influenced by changing the position of the head. Why does a patient with a recently destroyed labyrinth lie on the sound side? We are told that it is because he can thus increase the resistance to the nystagmus by being in a position better to turn his eyes toward the side of the slow component. Although this is true, it occurred to me that it is also true that in the side position assumed by these patients, all the ampullae of the functionating labyrinth lie at a higher level than their canals, and thus the higher temperature which I believe resides within the ampullae is rendered less potent as an instigator of endolymph currents (rest-tone) than in any other position of the body. The upper labyrinth being dead, but little unbalance phenomena occur.

With total absence of endolymph flow in both labyrinths, no vertigo or nystagmus, etc., can physiologically be aroused, nor can tonus exist.

I have observed many patients in whom rotation failed to elicit nystagmus or vertigo, and yet caloric excitations reacted strongly and readily. I explain this seeming anomaly as follow: these are usually nerve deafness sufferers (often specific cases). Their whole auditory apparatus is below par. Hence the usual analogous canal currents during and following rotations are insufficient to elicit reaction phenomena, whereas unilateral or unsymmetrical bilateral flows, being more irritating stimulation complexes, are wont to give exaggerated reactions. This seems the most probable explanation because normally the caloric tests are the weakest we employ to determine presence of function.

The straight line filaments of critical velocity flow (the working flow of the canals) tend to continue during and after changes in position, and unless the changes are sufficiently sudden (acceleration speed, + or —, sufficiently great) the current changes are so gradual that no motion is sensed. In Shambaugh's case, the flow could not continue on stoppage of the pressure, owing to blockage of the canal tested by inflammatory lesion. Hence nystagmus, flow and stimulation were coincident. In Ewald's experiment, flow and stimulation in the tested canal were coincident, but the opposite labyrinth was acting, and when the stimulation from the fistula pump ceased, this acting labyrinth supplied the stimulation which produced the phenomena.

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[5] Cyon, E.: Thése de Paris, 1878.

The continuance of the sensation of turning after rotation, or after caloric irrigation has ceased, and the delay in sensing actual rotation, may thus be partly explained by the persistence of critical velocity flow.

There are many other facts which lend themselves to my theory of labyrinth tonus. I mention the following:

In those cases of vertigo due to the so-called autointoxications, high blood-pressure, animal or vegetable or mineral tissue poisons, etc., how can we account for the various forms of vertigo experienced, except by a more or less transient bilateral inequality in the impulse complexes? Surely if the poisons, blood-pressure or other factors were bilaterally equally distributed to the vestibular and other coordinating mechanisms (as they would be through equal blood-supplies to both sides of the head), vertigo could not result. The stimulation impulses from the two sides would balance each other, and simply heighten or lessen tonus. Of course lessened tonus can beget, as can weakness from any cause, lack of normal balance control, but cannot beget, during rest, rotary vertigo. Rotary vertigo, then, can come only from bilaterally unequal or unsymmetrical excitations of the coordinating nervous mechanisms. This is normally possible only through the action of the vasomotor nerves.

The vasomotor nervous system is the great body tone maintainer, and through its control, variations in blood-pressure, nutrition, temperature, etc., are kept within certain bounds. The temperature gradients within the semicircular canals and utricle depend mainly on the size of the labyrinth vessels, and therefore unstable vasomotor phenomena in these vessels will affect tonus poise. Unsymmetrical vasomotor phenomena are common in many patients vertiginously inclined. Vasomotor influences anywhere along the coordinating tracts may cause vertigo, but I maintain that unless these influences be bilaterally unequal it is inconceivable that vertigo will result.

It can be demonstrated by careful rotation and bilateral caloric tests that every subject of vertigo presents a changed and bilaterally unequal sensibility to these labyrinth stimulants. This sensibility may be more marked in one stimulation complex, than in another, and is explainable by the theory of tonus maintenance I have outlined.

Finally I desire to call attention to the fact that within the animal body there exists no canal or system of canals wherein the circulation of fluid is possible that such fluid is in a state of quiescence, and it is improbable that the static labyrinth should prove an exception to this rule. The endolymph must therefore be in constant motion, maintain a stress on the cupulae, and originate the tonus emanating from the ampullae of the semicircular canals.

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ABSTRACT OF DISCUSSION

Dr. G. W. MacKenzie, Philadelphia: I hardly consider that Dr. Fowler has proved his case and I offer some suggestions. That there is a tonus no one will doubt, for in the event of sudden destruction of the inner ear on one side we observe the effects of the tonus of the other side with nystagmus and vertigo. If galvano-electricity is applied, using the anode, it causes nystagmus in the opposite direction with vertigo. So no doubt there is a tonus that can be measured in milliamperes. Barany and others have been working for years to try to locate just where this tonus is. In the event of acute destruction of one side, even when the internal ear has been removed, we are still able to stimulate the crippled side, showing that there is some tonus beyond the labyrinth. That is one point I offer. Another is that if this constant endolymph flow existed we could not explain a case I cited several years ago before this Section, in which case the external semicircular canal had had a fistula which afterward healed or closed after a more radical mastoid operation had been performed. According to the turning test, a typical reaction was obtained that corresponded to destruction of the inner ear. Had there been such a current as described by Dr. Fowler, the tonus ought also to have been proportionately destroyed, whereas, by reason of the normal galvanic reaction which was present, it was not. Now we do know that the tonus cannot be located in the greater brain, for in animals in which the greater brain has been extirpated the animal reacts the same to all stimuli as in the normal. I think we have just as much reason to locate it in the cerebellum, which regulates the tonus of other parts of the body.

Dr. E. P. Fowler, New York: There are, of course, many points that come to mind in the consideration of this subject. I tried to concentrate the argument on the tonus arising from the canals. There is no question, as Dr. MacKenzie has said, that all factors that have to do with body balance may play a part in the matter of tonus, and I so stated. If one labyrinth is destroyed balance is soon regained. This can occur only if the remaining labyrinth impulses are opposed or balanced by others arising from these factors, or from a throttling of the impulses from the live labyrinth. I have asked all interested in this work to mention any combination of circumstances that this theory will not cover; of course, it is only a theory, and all theories have certain apparent difficulties. So far I haven't encountered a theoretical or actual condition which we cannot explain by this theory. It is at least founded on a solid physiologic basis, and I simply offer it as a theory until further investigations shall prove it true.

THE ATROPIN TREATMENT OF DYSMENORRHEA

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In a paper[1] presented to the Section on Obstetrics, Gynecology and Abdominal Surgery at the recent session at Atlantic City, I referred to the possibility that certain cases of uterine bleeding are due to, or at any rate, are associated with, disturbances in the so-called vegetative nerve system. The evidence which I then offered for the support of this view applies with equal force to the causation of other menstrual disturbances as well as uterine bleeding.

In the case of the latter symptom, no important therapeutic result has as yet been yielded by theoretical considerations as to the influence of the vegetative nerve system on the menstrual function. On the other hand, it is interesting to know that, in the case of dysmenorrhea, a definite method of treatment seems to have been suggested by recent studies showing the great importance of the vegetative nerves in visceral physiology. I refer to the treatment of dysmenorrhea by atropin. A number of articles on this subject have appeared in the German literature, but, so far as I am able to learn, it has received little or no attention from American gynecologists.

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[1] Novak, Emil: The Pathologic Physiology of Uterine Bleeding, The Journal A. M. A., Aug. 22, 1914, p. 617.

The treatment of one form of dysmenorrhea in particular is notoriously inadequate and unsatisfactory. I mean that type which is observed so characteristically in young nulliparous women, and which is so frequently associated with scanty menstruation and sometimes with sterility. We are all familiar with the picture. The pain, often exaggerated by the nervous or hysteric temperament of the patient, is sometimes extremely severe, so that the recurrence of the monthly periods is looked forward to with dread. As a rule the pain is characterized as cramp-like or colicky, beginning a day or two before the actual onset of menstruation, and ceasing when the flow is well established. This form of dysmenorrhea is spoken of variously as "spasmodic dysmenorrhea," "essential dysmenorrhea," etc. Its occurrence is not dependent on the presence of any demonstrable pelvic disease, although in a considerable proportion of cases, the generative organs present a condition of underdevelopment or perhaps of actual infantilism. By some (Herman) the use of the term "dysmenorrhea" is limited to the type of menstrual pain just described, the affection being looked on as a distinct entity. While I do not agree with those who would give the term such a restricted application, it is not my present purpose to enter into a discussion of the varieties of dysmenorrhea and their etiology. Suffice it to say that the atropin treatment, of which I wish to speak, is indicated only in cases of dysmenorrhea of the so-called spasmodic type.

UNSATISFACTORY PRESENT TREATMENT OF SPASMODIC DYSMENORRHEA

The many plans of treatment, medicinal and operative, which have in the past been advocated in the treatment of this troublesome condition indicate that none has been eminently successful. The fact that even hysterectomy is sometimes resorted to shows to what desperate straits gynecologists are sometimes driven in the management of such cases. Of the medicinal agents used for the relief of this form of menstrual pain, those most in vogue are the coal-tar products, the bromids, hydrastis and viburnum prunifolium. None of these has given very striking results. The two drugs which relieve the pain in these cases with greatest certainty and swiftness — morphin and alcohol — possess disadvantages which should practically preclude their employment.

Among the operative measures advised for the relief of the condition, that most commonly resorted to is dilatation of the cervical canal, most frequently by the rapid method. While in a certain proportion of cases this operation is followed by relief from pain, the improvement is often only temporary. Equally unsatisfactory have been the results of the various operations which have been devised by Dudley, Pozzi and others for permanently overcoming the cervical stenosis which many hold responsible for the suffering in these cases. This is not surprising when one considers that there is now little justification for the old theory that dysmenorrhea is due to mechanical obstruction to the exit of menstrual blood from the uterus.

CAUSE OF SPASMODIC DYSMENORRHEA

Without reviewing the various theories as to the causation of spasmodic dysmenorrhea, it may be said that the explanation accepted by the largest number of investigators is that the pain in these cases is due to a colicky contraction — a spasm — of the uterine musculature, so that the term "menstrual colic," suggested by Stolper,[2] is not inappropriate. The exact mechanism involved in this labor-like contraction of the uterine muscle is not known. The numerous "causes" given by text-book writers — hysteria, neurasthenia, anemia, overwork, etc.—are only predisposing factors. It may be added that there are some who consider that the pains are due to "vascular crises" rather than to muscular contractions. The problem is thus in somewhat the same status as that of the mechanism of intestinal colic, which some also consider vascular rather than muscular in origin. The weight of evidence, however, points to muscular spasm as the cause of the form of dysmenorrhea we are now discussing. This view receives perhaps its fullest justification from a consideration of those cases of dysmenorrhea in which the expulsion of blood-clots is accompanied by distinctly labor-like contractions of the uterus. It must be admitted, however, that in most instances of spasmodic dysmenorrhea the menstrual flow is unclotted, and usually rather scanty.

THE ATROPIN TREATMENT

The use of atropin in the treatment of spasmodic dysmenorrhea is based on the fact that atropin diminishes the irritability of the autonomic nerve-endings in the uterus. In 1910, Drenkhahn[3] reported remarkable results from the injection of a solution of atropin directly into the cervical canal (1 mg. of atropin in 1 c.c. of water). If a speculum or syringe be *not* at hand, he advised the introduction of a tampon saturated with the atropin solution (1 per cent. strength). This plan of treatment Drenkhahn states he had followed for fifteen years, basing it originally on the experimental work of Schindler,[4] who showed that atropin has a direct action on the uterine muscle.

The method was taken up by Novak[5] of Vienna, who was struck by the fact that many women with increased irritability of the autonomic nerve system suffer with dysmenorrhea. In accordance with the *Krampftheorie* he suggested that the dysmenorrhea is due to the increased irritability of the autonomic nerve endings in the uterus. Novak administers the atropin in pills containing 0.5 mg. each, three being given each day, beginning just before the expected onset of menstruation. His preference for the administration of the drug by the mouth is a wise one, for the results appear to be just as satisfactory as by Drenkhahn's method, while he thus avoids the slight danger of infection associated with the latter. Novak's method is obviously less disagreeable, especially in the case of virgins.

Thirty-eight cases were reported by Novak, in thirty of which the results were distinctly favorable. All these patients had suffered with "crampy" pains, except one in whom the pain was rather continuous, and one in whom the character of the pain is not mentioned. In the thirty favorable cases the pain either disappeared entirely or else became insignificant. The less characteristic symptoms which so frequently accompany the spasmodic pain — backache, bearing down in lower abdomen, general lassitude, etc. — were not influenced by the atropin, which seemed to exert a special effect on the colicky pains. In one case the result was rather indefinite, the patient being better, but not strikingly so. In seven cases the treatment failed to relieve the pain. Among these seven were the two mentioned above as atypical, that is, not suffering with the spasmodic pains of typical "menstrual colic."

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[2] Stolper, L.: Wien. klin. Wchnschr., 1914, xxvii, 46.

[3] Drenkhahn: Zentralbl. f. Gynäk., 1910, xxxiv, 1531.

[4] Schindler: Arch. f. Gynäk., 1909, lxxxvii, 607.

[5] Novak, J.: Zentralbl. f. Gynäk., 1911, xxxv, 576; Wien. klin. Wchnschr., 1913, xxvi, 2068.

EXPLANATION OF FAILURES

Novak is inclined to believe that failures, when they occur, are due to insufficient dosage. This would seem to be in conformity with the experimental work of Kehrer,[6] who found that in small doses atropin stimulates the uterine muscle, while in large doses it inhibits it.

Stolper, who has also employed the atropin method in a large number of cases, offers a different explanation for the failures which occur in a certain proportion of cases. He asserts that atropin is very efficient in those cases in which the dysmenorrhea is accompanied by other vagotonic symptoms. In a certain number of dysmenorrheics, however, vagotonic symptoms are absent, and, according to Stolper, there may even be symptoms indicating a heightened irritability of the sympathetic system (sympathicotony). As a means of clinical differentiation between these two groups, he lays much stress on a study of the blood-pressure. He lays down the rule that women with a normal or slightly raised blood-pressure react most promptly to atropin, while when the blood-pressure is greatly raised there is apt to be no response to the administration of atropin. The blood-pressure *must* be measured in the intermenstrual interval, not during menstruation or during the premenstrual period. Stolper, I may add, administers the drug either in suppositories (0.001 gm.) or by subcutaneous injection (0.00075 gm.).

PERSONAL EXPERIENCE

My own experience with the atropin treatment of spasmodic dysmenorrhea has been most encouraging. In the frequent cases of young unmarried women in whom pelvic examination is obviously undesirable, and who present the classic picture of spasmodic pain recurring with each menstruation, the atropin treatment is indicated without the preliminary of pelvic examination. In my own cases I have followed the plan of Novak, though I have frequently administered somewhat larger doses than those recommended by him. My experience has been that the cases which respond most favorably are, speaking generally, those in which the atropin has been pushed to the point of tolerance. The plan has been to commence the administration of the drug about two days before menstruation is expected to appear, and to continue its use until the second or third day of menstruation, depending on the usual duration of the pain. Patients differ, of course, in the degree of tolerance to the drug. Ordinarily, about 1/100 grain is given three times a day, unless some pain appears, in which event, if there are no symptoms of atropin saturation, the doses may be given somewhat more frequently. Many patients complain of dryness of the throat, itching of the skin, and sometimes even disturbed accommodation, in which case it may be necessary to lessen the dosage somewhat. When it is desired to study the effect of the atropin on dysmenorrhea, it is best to administer it alone, as in tablet form. In some cases, however, I have combined it with various other drugs of analgesic nature, such as aspirin. Further than the occasional symptoms due to overstepping of the patient's atropin tolerance, I have observed no bad results of any kind.

My purpose in writing this paper is to call attention to this method of treatment rather than to report my own results. My experience is still comparatively small, and since many of the cases are of very recent date it is scarcely suitable for detailed report. The results in the thirty or more cases of spasmodic dysmenorrhea which I have treated with atropin have been very encouraging—so much so as to impel me to further employment of the method. While there have been some failures, there have been, on the other hand, some strikingly successful results. For the failures I have no explanation to suggest other than those quoted above from Novak and Stolper. It is hardly necessary to add, *in conclusion*, that it would be illogical to expect good results from the administration of atropin in cases of dysmenorrhea — using the term in its broader sense — associated with definite pathologic lesions in the uterus or adnexa. In such cases the logical treatment of the menstrual pain is the removal or treatment of the causative lesion.

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THE ENDOWMENT OF MOTHERHOOD*

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In this day, when the laity is discussing eugenics, and legislatures are enacting laws for the betterment of the race, it behooves us as medical men to consider the value of the potential mother and her unborn babe as a national asset and ascertain wherein their status can be benefited. The crux of the situation is the safety of the mother during pregnancy, labor and the puerperium.

The latest reports of the Bureau of Census on mortality statistics[1] show that slightly more than 42 per cent. of the infants dying under one year in the registration area in 1911 did not live to complete the first month of life, and that of these 42 per cent., almost seven-tenths died as the results of conditions existing before they were born, or of injury and accident at birth. Of those that lived less than one week about 83 per cent. died of such causes, and of the number that lived less than one day 94 per cent. died of these causes.

In the registration area of the United States, embracing 40.4 per cent. of the population, from 1901 to 1905, the yearly average puerperal mortality from all causes was 4,692, and in the five years ending 1910, with 48.9 to 58.3 per cent. of the population, the average death-rate was 7,219. If we divide the mortality into two groups: (1) accidents of childbirth, which includes deaths from abortion and miscarriages, placenta praevia, eclampsia, mania, *post-partum* hemorrhage and other accidents of pregnancy and labor including ectopic gestation, rupture of the uterus, adherent placenta and some cases of pelvic deformities, and (2) puerperal infection, we find that in the quinquennial period ending in 1905, the yearly average death-rate from puerperal infection was 2,057, or 44 per cent., and in the similar period ending in 1910 the average mortality from the same cause was 3,224, or 44.6 per cent.[2] In 1911, with 63.1 per cent. of the population in the registration area, the mortality from all causes incident to childbirth was 9,156, and of this, 4,376, or 47.7 per cent., were due to puerperal infection. In 1912, with 63.2 per cent. of the population in the registration area, the total death-rate was 9,035, and of this, 3,905, or 43.2 per cent., were due to puerperal infection. The minimum annual mortality from puerperal infection since 1900 was 39.7 per cent. (1906), and the maximum 47.8 per cent. (1911), while the general average was 44.8 per cent.

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[6] Kehrer: Arch. f. Gynäk., 1907, lxxxi, 160.

* President's address, read at a meeting of the Washington Obstetrical and Gynecological Society.

[1] West: Pre-Natal Care, Children's Bureau, Dept. of Labor.

Since, in the last census (1912), not quite two-thirds of the population is represented in the registration area, and there occurred 9,035 deaths of mothers in childbirth, it is more than likely that if the entire country was registered, at least 15,000 if not more maternal deaths would be reported annually.

The figures published annually by the Registrar-General show that the mortality from puerperal infection in the British Isles has diminished in the last forty years and that in some parts of the kingdom there is evidence that up to a recent date the disease has shown a tendency to increased frequency. Lea[3] states that these facts constitute a grave reproach to the present-day practice of midwifery and are deserving of searching investigation. In five years, 1851 to 1856, the puerperal death-rate from all causes was 4.9 per thousand, and in the five years ending in 1906 it was still 4.2 per thousand. The mortality from puerperal infection varies between 2 and 2.5 per thousand. These figures do not include deaths from all causes dependent on or associated with pregnancy and the puerperal state. If these are added, the total mortality is raised to 5.09 per thousand.

The general septic mortality in Germany, according to the figures recorded by Von Herff, still amounts to 2 per thousand, although this shows a marked improvement on the figures of former years.

In the kingdom of Saxony the death-rate from infection from 1883 to 1886 amounted to 4 per thousand. In 1887 to 1894 it was 2.4 per thousand, and in 1901 to 1903 it was only 1.5 per thousand. The statistics from other parts of the German Empire show a reduction also, amounting in some districts to 50 per cent.

The puerperal mortality of Basle appears to be the lowest hitherto obtained; thus out of 10,497 births in three years, 1901-1903, the total deaths from puerperal infection amounted to 15, a mortality of 0.14 per cent. These figures afford a striking illustration of the success which follows the complete organization of the attendance on puerperal women, and the cooperation of nurses, medical men and the maternity hospital.

Why women at this day are permitted to entrust themselves to the hands of ignorant and untrained persons at the most important period of their lives would seem incredible but for the fact that it is actually true. It is not that we are more capable than our predecessors, for comparatively few epoch-making measures have been evolved in obstetrics in the last half century, but it is the immense advantage we possess in the added knowledge of asepsis and antisepsis and preventive medicine, owing to the developments in modern bacteriology.

It is more than three-quarters of a century ago since Holmes in his classical essay crystallized the prevailing views in support of the contagiousness of puerperal fever (infection), and the genius of Semmelweis illumined its etiology, and by his method of prevention of infection blazed the way for the development of the well-nigh perfect technic of to-day. It is over fifty years since that grand savant, Pasteur, established the correlation of germs with disease and proved that wound infection and puerperal infection were identical; and yet, notwithstanding these epoch-making advances of knowledge in the prevention of infection, the mortality and morbidity in parturition and the puerperium, in the general practice of obstetrics, has been but little diminished since the advent of the antiseptic era.

That thousands of women die every year from puerperal infection and accidents of childbirth, that many thousands more pass into the care of the gynecologists, and that one-third of the blindness in the world is the result of ophthalmia neonatorum are true and convincing proofs that obstetrics is wofully lacking in the careful study and attention it so rightly deserves.

How shall we lessen this frightful mortality and morbidity? To use a commercial phrase let us take stock and see wherein we can minimize the dangers that beset pregnancy, labor and the puerperium. While much of the etiology and pathology of the diseases of pregnancy are unknown, yet we have many measures of prevention at our command that lack universal application because of ignorance, carelessness and faulty judgment. The toxemias, ectopic pregnancy, pyelitis, hydatidiform degeneration of the chorion, placenta praevia, tumors, deformities of the pelvis and the various dystocias are, in the majority of instances, recognizable to the careful and painstaking physician.

Bacteriology has been of incalculable benefit in revealing the protean character of puerperal infection, and that it is mostly of external origin and due to ignorance or carelessness and, therefore, is largely preventable. Asepsis has made possible undreamed of achievements in surgery and obstetrics. The surgical and mechanical aspects of labor have during the last quarter of a century made great strides, and obstetricians have formulated definite principles governing the various complications that present themselves during the puerperal state.

The brilliant results of cesarean section, abdominal and vaginal, in contracted pelves, certain cases of placenta praevia and eclampsia, and in certain borderline cases that before the era of asepsis were deliverd by forceps or version, frequently resulting in the death of the child and mutilation of the mother, are now of such frequent occurrence that they excite little attention.

Symphyseotomy, and its recent variation, pubiotomy, are employed by some obstetricians in medium contractions of the pelvis, though as independent procedures they are being supplanted by the more advantageous cesarean section. They still have a limited field of application in impacted posterior face and cephalic cases and then usually as an adjuvant to forceps or version.

The induction of labor too, in contracted pelves, is yielding to cesarean section because of the increased likelihood of the survival of the infant. Yet, even with this abridgment, it has a large sphere of employment in the diseases that menace the life of the mother, as toxemias, placenta praevia, uncompensated heart lesions, some cases of tuberculosis, chorea, pernicious anemia and hydatidiform mole.

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[2] Reports of Bureau of Census, U. S., 1900-1912.
[3] Lea: Puerperal Infection, London, 1910.

The forceps is the most valuable and most abused instrument in the obstetric armamentarium. When the indications for its employment are observed and application properly made, the chances of the child are increased and the suffering of the mother frequently shortened.

Version is one of the oldest and most serviceable of the obstetric procedures. When skilfully performed it is of great value in dissolving abnormal presentations, controlling hemorrhage in placenta praevia and securing immediate delivery.

Manual correction of defective rotation, and manual, bag and instrumental dilatation of the cervix are employed in suitable cases to promote and effect delivery.

Pituitary extract has proved to be of value in reinforcing flagging pains. Its intermittent action, simulating the normal action of the uterus, is of service in inertia. It should be administered only when there is no disproportion between the child and the pelvis and after the cervix is completely dilated. Neglect of these precautions may cause extensive lacerations of the cervix and even rupture of the uterus. It does not *initiate* labor pains but augments them.

The recent findings of Abderhalden, demonstrating the cleavage of placental proteins by ferments in the blood of the host during pregnancy, is a valuable addition to our knowledge of physiologic chemistry, and it is to be hoped that this line of investigation may solve the much vexed problem of toxemia and furnish an effective remedy against this terrible scourge.

Acidosis, when present in pregnancy, indicates toxemia and not nephritis unless a toxemia has been superadded. The urobilinogen test is of service in this connection in that a positive reaction is indicative of toxemia. It has long been observed clinically that pregnant women suffering with chronic nephritis rarely have eclampsia.

The long-cherished hope of a specific remedy for puerperal infection has not been realized. Serum and vaccine treatment have proved unavailing. Our principal reliance still must be in prevention, and when it is present, on general, supportive and surgical measures.

The importance of the supervision of pregnancy cannot be overestimated. Many abnormalities are detected by a painstaking examination during this period. Pelvimetry and palpation give valuable data not only of the size but also of the shape of the pelvis. Methodical urinalyses will detect toxemia and give timely warning of impending danger, while a carefully elicited history will furnish much important data concerning previous pregnancies and labors.

These are the principal resources, the judicious use of which, together with careful technic, enables the obstetrician, in hospital and private practice, to reduce the mortality and morbidity of parturition to the minimum.

The statistics of maternity hospitals afford the most striking evidence of the value of modern aseptic and antiseptic methods. In former years the death-rate in these institutions amounted to from 3 to 5 per cent. and at times to as much as from 8 to 10 per cent. At the present day severe infection has almost been entirely abolished, and the mortality has been reduced to a small fraction of 1 per cent. (from 0.1 to 0.2).

The figures of the York Road Lying-In Hospital,[3] during sixteen years, show that in 8,376 deliveries there were no deaths from infection.

In the Rotunda Hospital, Dublin, during the year 1907-1908, 2,060 women were confined without a fatality from infection arising in the hospital.

At the Clinique Baudeloque in Paris, in over 3,000 births occurring annually, the total mortality from infection during the last five years amounted to less than 0.09 per cent.[3]

In the Johns Hopkins Hospital, in the first 5,000 cases delivered, 2,750 being outdoor patients, the total mortality was fifty-five, a ratio of 1.1 per cent.[3] The death-rate from infection was 0.42 per cent., and of these patients at least one-half were infected before admission to the hospital.

In 9,090 patients cared for in the Columbia Hospital of Washington, D. C., from 1876 to 1912 the total mortality was 120, a ratio of 1.3 per cent. The death-rate from infection was 0.28 per cent. and of these twenty-six women, six were infected before admission.

Why is the standard of obstetrics in general practice so low? The following have been imputed to be the responsible agents: ignorance and indifference of the laity; that pregnancy and labor are normal processes and do not require experienced help; the midwife and her bargain counter inducement, and the laxity of the medical profession. While these are admittedly factors in the final analysis, lack of training of the medical graduate in practical obstetrics is the principal cause.

The results of Williams' questionnaire[4] on the midwifery problem in the United States showed that the present standard of teaching obstetrics, particularly clinically, is far from satisfactory. Many of the schools are inadequately equipped for the teaching of obstetrics properly, only one having an ideal clinic; many of the professors are poorly prepared for their duties and have little conception of the obligations of a professorship; many of the teachers admit that their students are not prepared to practice obstetrics on graduation; one-half of the answers state that ordinary practitioners lose proportionately as many women from puerperal infection as do midwives and that reform is urgently needed, and can be more readily accomplished by radical improvement in medical education than by the almost impossible task of improving midwives.

Surgery is made the intensive course of the curriculum to the disadvantage of general medicine and obstetrics, which are certainly of more vital importance to the recent graduate. More than 50 per cent. of the present-day graduates are aspiring to do surgery, and the number is increasing. Its spectacular aspect and the apparent ease with which the skilled surgeon does his work lure to disaster the unwary and untrained operator whose principal assets are the hemostat and self-assurance. The boon of anesthesia and asepsis has not been an unmixed blessing, for it has made possible the commission of innumerable tragedies under the guise of surgery. Those who have control of hospitals know that the average intern is so enamored of the knife that it is difficult to make him familiarize himself with laboratory and other nonsurgical duties. It is no great achievement to be able to do the mechanical part of surgery; any tyro with nerve can do that; but it is a fine accomplishment and a rare one, to be acquired only by experience, keen observation and sound judgment to think and act surgically. What is said of surgery applies with equal emphasis to operative obstetrics. Special aptitude and training are requisite for efficient work. Every obstetrician knows that a large share of his consultation practice is not so much to give counsel what to do but to correct an error of judgment or execution.

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[4] Williams, J. Whitridge: Medical Education and the Midwife Problem in the United States, The Journal A. M. A., Jan. 6, 1912, p. 1.

Some will argue that the recent graduate is no more capable of taking care of a serious organic disease than to perform a surgical operation. While that may be true, the conditions surrounding each are apt to be different. The operator is often the sole arbiter as to his competency, while the physician, because of the nature of his work, which, as a rule, is subject to deliberation, can better safeguard the patient's interest. If the physician be incompetent or unsatisfactory a consultation or retirement from the case is likely to suggest itself. Surgery, on the other hand, frequently calls for prompt and decisive action, and if there has been an error of judgment or execution the injury done is often permanent.

MORTALITY IN THE PUERPERAL STATE (PREGNANCY, FARTURITION AND LACTATION)

	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
Accidents* of pregnancy (abortion, miscarriage, ectopic gestation, tubal pregnancy, etc.)	526	526	535	570	579	537	762	757	772	834	877	908	863
Puerperal hemorrhage	210	287	284	341	360	413	454	465	425	357	754	851	923
Other accidents† of labor (cesarean section, forceps application, breech presentation, symphyseotomy, difficult labor, rupture of the uterus in labor, etc.)	236	306	283	280	321	286	469	471	598	788	820	911	842
Puerperal septicemia	1,769	1,882	1,813	1,992	2,291	2,309	2,622	2,908	3,271	3,427	3,892	4,376	3,905
Puerperal albuminuria and convulsions	671	803	768	929	1,075	981	1,348	1,470	1,619	1,706	1,824	2,094	2,174
Puerperal phlegmasia alba dolens, embolus and sudden death	5	1	2	5	3	7	32	8	13	23	230	266	276
Following childbirth (not otherwise defined)	689	488	478	452	479	542	654	638	643	650	53	48	44
Puerperal diseases of the breast	—	1	1	—	1	2	—	2	3	6	5	2	8
Total deaths	4,106	4,314	4,164	4,569	5,109	5,077	6,641	6,719	7,344	7,791	8,455	9,456	9,035
Fercentage of sepsis	42.1	45.9	43.5	43.8	44.8	45.0	39.7	43.3	44.5	44.0	46.0	47.7	43.2
Percentage of population	40.5	40.3	40.4	40.4	40.4	40.4	48.9	49.2	52.5	56.1	58.3	63.1	63.2

* In the sense of conditions or operations dependent on pregnancy or labor, not "accidents" from external causes.
† Term not used in invidious sense.

A promising augury of the future of medicine is the advanced requirements for matriculation, the lengthened course and the elimination of the low grade colleges. The enforcement of the high standards of medical education and ethics should add to the proficiency of the profession, but they will by no means cure its most besetting evils, charlatanism and quackery. The more stringent the requirements for the legitimate practice of medicine are made the more certain is the harvest of the unscrupulous, who thrive on ignorance and credulity.

It is my firm conviction that the next move in the line of progressivism should be the revision of the curriculum. Surgery has been, in recent years, featured more and more at the expense of the other branches, particularly obstetrics. Surgical work is largely elective, requires special aptitude, a basic knowledge of anatomy, physiology, pathology, bacteriology and general medicine, and a discerning judgment which can be obtained only by a wide and varied experience under competent supervision. The graduate course in surgery, therefore, should be devoted to the study of its principles and diagnosis, while its practice should be regulated by postgraduate efficiency. Much of the time spent in the amphitheater could be more profitably devoted to the general and obstetric wards.

The most glaring default of medical teaching is the paucity of time and attention that is given to obstetrics. Its present standard is so low that it is a disgrace. To err from ignorance when human life and health are involved is lamentable, but when we possess the light and neglect to avail ourselves of the knowledge it is inexcusable, aye, often criminal. Yet we have known for several decades that puerperal infection is a preventable disease, and in spite of this fact quite 50 per cent. of the mortality in childbirth is due to this cause. What is needed then is for the colleges to take cognizance of the glaring omissions in the teaching of this important branch by providing ample facilities for the student actually to assist and attend patients during labor and also be instructed clinically in the supervision of pregnancy and the puerperium by competent teachers. A potent factor in much of the inferior and meddlesome midwifery practice owes its inception to the faulty and inadequate training of the student under the direction of an inexperienced intern, or his initiation in the outdoor confinement cases without proper supervision and facilities. No surgeon would elect to perform an operation except under the most favorable environment, and no obstetrician should permit his students to be trained in a haphazard and indifferent manner. Clinical obstetrics is the most exacting and onerous branch of medical teaching, and efficient service can be obtained only by a reasonable compensation.

The college curriculum should be revised so as to fit men to do the greatest good to the race. Obstetrics and general medicine should be intensively taught in the graduate course, and the practice of surgery and gynecology, which are largely elective, should be restricted to postgraduate teaching.

This is the era of specialism and rightly so, for the rapidly widening horizon of the science and art of medicine make it impossible for one mind to encompass the ever-broadening scope of its manifold developments and applications. It is likewise, however, an era of hysteria, distrust and commercialism. The profession of medicine is essentially philanthropic, but its history shows that many of its followers have ever been actuated by cupidity rather than by altruism. Surgery, like obstetrics, is suffering from incompetent and untrained operators and reform is urgently needed. The advanced standards of medical education and the ultimate standardization of the hospitals, together with the aid or control by the state, whose duty it is to conserve the health of its people, should greatly elevate the practice of medicine, obstetrics and surgery, but the morale of the profession will depend on its members recognizing their limitations and giving their best endeavors to the relief of suffering humanity.

Obstetrics is the most arduous, least appreciated, least supported, and least compensated of all the branches of medicine. Its dignity and importance will never be recognized as long as the incompetent female and male midwives with their bargain counter inducements are placed on an equality with the trained practitioner. That statistics may show that the results of the general profession are little if any better than those of the midwives is beside the question and proves that the standard of teaching of obstetrics is low, very low, and needs to be radically improved.

Recently the President of the United States issued a proclamation setting apart a day each year as a public expression of our love and reverence for the mothers of the country. It is fitting, then, that the medical profession should awaken to its sense of duty to the state and the family by inaugurating a nation-wide propaganda that shall have for its purpose the teaching of the laity that the long-cherished fallacy that pregnancy and labor are normal physiologic conditions and therefore require no special care, in the light of the clinical fact that normal pregnancy and parturition are the exception, must be abandoned, and that henceforth the proudest and noblest privilege of woman—motherhood—shall be zealously guarded and cared for by trained physicians and not by ignorant midwives, male or female.

The peroration of Oliver Wendell Holmes in his "Essay on the Contagiousness of Puerperal Fever" so beautifully expresses the duty of the physician to motherhood that I quote it *in extenso:*

> It is as a lesson rather than a reproach that I call up the memory of these irreparable errors and wrongs. No tongue can tell the heart-breaking calamity they have caused; they have closed the eyes just opened on a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into the stranger's arms, and bequeathed it, with less cruelty, the death of its dying parent. There is no tone deep enough for regret, and no voice loud enough for warning. The woman about to become a mother, or with her new-born infant on her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden, or stretches her aching limbs. The very outcast of the streets has pity on her sister in degradation, when the seal of promised maternity is impressed on her. The remorseless vengeance of the law, brought on its vicitim by a machinery as sure as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multiplied trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful period, should hazard it negligently, unadvisedly, or selfishly.

2426 Pennsylvania Avenue, N. W.

Finding Fleas on Plague Rats.—The method of combing rats for fleas—particularly plague-infected rat fleas—presents certain disadvantages which have been obviated by the following method: From several tests it was found that fleas began to leave a killed rat as early as fifteen seconds after death and all had left the body a little more than two hours and fifteen minutes afterward. We therefore killed the rat by cephalotripsy and immediately placed the body on a glass-rod grating over a collection of water in a very large glass jar or the inverted cover of a garbage can; either one will answer the purpose. The fleas soon begin to leave the rat's body and drop into the water, and may be conveniently collected by means of a medicine dropper. We have obtained higher counts in this way than by chloroforming and combing or by any other method. C. F. Mason, *Rept. Dept. of Health*, Panama Canal.

THE AMINO-ACID CONTENT OF THE BLOOD AND SPINAL FLUID OF SYPHILITIC AND NON-SYPHILITIC INDIVIDUALS *

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Wide variations in the amino-acid content of the blood and spinal fluid of patients with syphilis have been reported. As these variations far exceeded any ever seen experimentally in animals even under most abnormal conditions, it seemed advisable to investigate the question. This communication reports the results of the quantitative determination of amino-acid nitrogen in the blood and spinal fluid of normal and syphilitic individuals.

In 1913, D. M. Kaplan,[1] and Kaplan and McClelland[2] described what they entitled "A Quantitative Chemical Reaction for the Control of Positive Wassermann Reactions." The reaction described was merely the quantitative estimation of amino-acid nitrogen according to the method of Van Slyke.[3] According to Kaplan and McClelland the amino-acid nitrogen of the blood is diminished in patients with syphilis, and the quantitative determination of amino-acid nitrogen in the blood may be used as a diagnostic procedure in doubtful cases. Kaplan[4] reports determinations of amino nitrogen in the blood of 109 patients. His results varied between 0 mg. and 15.716 mg. nitrogen per hundred c.c. of blood. Of the 109 patients fifty-one were clinically diagnosed syphilis, while fifty-eight were suffering from other pathologic conditions. In the patients showing clinical evidence of syphilis, the amino-acid nitrogen of the blood varied between 0 mg. and from 2.8 to 2.9 mg., and in the patients clinically negative between 4 and 15.7 mg. per hundred c.c. of serum. Kaplan[4] states that this difference in the amino-acid content of the blood may be used as a point in differential diagnosis. He says:

> If we should offer, for example, a patient whose serum resulted in a positive Wassermann reaction and who presented no physical or historical evidence of syphilis, and whose serum gave an amino content of over 4.0 mg. of amino nitrogen in 100 c.c. of serum, I would, on the strength of 472 corroborative analyses, exclude syphilis on that ground.

In a later paper Kaplan and McClelland[2] report the results of the determination of amino nitrogen in the blood of 229 patients. In this paper they report the amino nitrogen diminished, that is below 2.3 mg. per hundred c.c. in 90 per cent. of forty patients in whom syphilis was clinically present and the Wassermann reaction positive, and in 77 per cent. of thirty-two patients in whom syphilis was clinically present and the Wassermann reaction negative. They give also the results in 117 patients suffering from conditions other than syphilis; of these 117 patients only three showed more than 7 mg. amino nitrogen per hundred c.c. This is in striking contrast to the previous communication of Kaplan[4] in which forty-four out of fifty-eight gave results in excess of 7 mg. With regard to the determination of amino nitrogen in the spinal fluid Kaplan[4] says:

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* From the Hospital of the Rockefeller Institute for Medical Research.

[1] Kaplan, D. M.: New York Med. Jour., 1913, xcvii, 1172; ibid., 1913, xcviii, 157.

[2] Kaplan, D. M., and McClelland, J. E.: New York Med. Jour., 1913, xcviii, 1012.

[3] Van Slyke, D. D., and Meyer, G.: Jour. Biol. Chem., 1912, xii, 399.

[4] Kaplan, D. M.: New York Med. Jour., 1913, xcviii, 157.

> In the study of quantitative relationship of the amino nitrogen in cerebrospinal fluid I am at present unable to give any useful data, as the amount of this substance in the fluid is very small and inconstant. The amount varies from 0.3 in the non-luetic and may be present in the luetic to the extent of 3.6 in 100 c.c.

TABLE 1.—AMINO-ACID CONTENT OF BLOOD IN THIRTY-NINE PATIENTS, WITH AMINO NITROGEN CONTENT OF SPINAL FLUID IN FIFTEEN

Diagnosis	Wassermann Reaction Blood	NH_2 Nitrogen in mg. per 100 c.c. Blood	NH_2 Nitrogen in mg. per 100 c.c. Spinal Fluid	Wassermann Reaction in Spinal Fluid, c.c.
GROUP 1.—NON-SYPHILITIC				
Rheumatic fever	—	7.0		
Rheumatic fever	—	5.8		
Chronic cardiac	—	4.6		
Lobar pneumonia convalescent	—	4.8		
Lobar pneumonia convalescent (malaria)	—	6.3		
Lobar pneumonia convalescent	—	5.3		
Lobar pneumonia convalescent	—	6.3		
Tuberculosis	—	8.3		
Average	..	6.1		
GROUP 2.—SYPHILIS OTHER THAN SYPHILIS OF THE CENTRAL NERVOUS SYSTEM				
Primary	++	6.3		
Primary	++	7.1		
Secondary	++	5.4		
Secondary	++	5.7		
Secondary	++	6.0		
Secondary	++	5.7		
Tertiary	++	7.4		
Tertiary	++	9.6		
Tertiary	++	7.2		
Tertiary	++	5.3		
Latent	++	5.7		
Latent	++	4.7		
Latent	++	5.4		
Latent	+	7.2		
Congenital	±	4.1		
Average	..	6.8		
GROUP 3.—TABES DORSALIS (INCLUDING ONE CASE OF GENERAL PARESIS)				
Tabes untreated	++	6.3	3.1	0.8++
Tabes untreated	—	6.2	2.8	0.4++
Tabes untreated	+±	6.8	3.1	0.4++
Tabes untreated	++	5.9	4.5	0.4++
Tabes untreated	—	5.5	3.3	2.0 —
Tabes untreated	++	7.6	2.7	1.0++
Tabes treated	—	8.2	2.6	1.0++
Tabes treated	—	6.0	2.5	2.0++
Tabes treated	++	6.5	3.3	1.0++
Tabes treated	—	4.3	1.7	2.0 —
Tabes treated	—	6.0	4.3	2.0++
Tabes treated	—	6.9	1.7	1.0++
Tabes treated	++	6.8	3.1	2.0++
Tabes treated	—	8.4	3.0	0.6++
Paresis treated	++	6.8	2.0	0.1++
Average	....	6.5	2.9	

These results of Kaplan and of Kaplan and McClelland would appear to possess great theoretical interest and some practical importance. We have, therefore, considered them worth an attempt at confirmation. In this we have been entirely unsuccessful.

Our determinations were made with the usual technic as described by Van Slyke and Meyer[3] for the determination of amino-acids in blood. All determinations were made in duplicate. We have examined the blood in thirty-nine patients, in fifteen of whom a determination of the amino nitrogen in the spinal fluid was also made. The results are shown in Table 1.

It will be seen that in our series there was no such wide variation of the amino nitrogen in the blood (0 to 15.716) and spinal fluid (0.3 to 3.6) as that reported by Kaplan, and that in this series there was no evidence of any diminution of amino nitrogen in the blood of patients with syphilis. The cases have been divided into three groups: (1) non-syphilitic; (2) syphilis other than syphilis of the central nervous system, and (3) tabes, including one case of paresis. The average value for amino nitrogen for the three groups is almost identical, 6.06, 6.8 and 6.5. It will be seen that in this series the syphilitics show actually slightly higher results.

Observations of the amino nitrogen content of the blood and spinal fluid of the same patients at different times have also been made. The results are given in Table 2. The specimens of blood and spinal fluid were always obtained without allowing more than a few minutes to elapse between the two procedures. They may therefore be considered to represent the proportionate content of blood and spinal fluid at a given time. It will readily be seen that within certain limits the amino nitrogen content of both blood and spinal fluid varies at different times in the same individual and that such variations are of practically the same magnitude as those occurring between the different individuals in our series. It will be seen also (Table 2) not only that the absolute amounts of amino nitrogen in blood and spinal fluid vary, but also that the relative amounts of these show a wide variation, in one individual the proportion of spinal fluid amino nitrogen to blood amino nitrogen being at one time 0.75, while two weeks later it was only 0.40, the absolute amount in the blood being practically the same on the two occasions.

TABLE 2.—AMINO NITROGEN CONTENT OF BLOOD AND SPINAL FLUID AT DIFFERENT TIMES

Case No.	Diagnosis	Date	NH_2 Nitrogen in mg. per 100 c.c. Blood	NH_2 Nitrogen in mg. per 100 c.c. Spinal Fluid	Ratio of Spinal Fluid NH_2 Nitrogen to Blood NH_2 Nitrogen	Wassermann Reaction Blood	Wassermann Reaction Spinal Fluid c.c.
1701	Tabes	3/ 3/14	8.3	3.6	0.44	+±	0.8++
		3/17/14	6.5	2.3	0.35	+	0.6++
		3/31/14	6.1	3.1	0.49	±	0.8++
		4/ 7/14	5.6	3.6	0.64	—	1.0++
1822	Tabes	3/ 3/14	7.8	3.0	0.38	++	0.4++
		3/17/14	6.5	2.3	0.35	++	0.4++
		3/31/14	6.75	3.1	0.46	++	0.4++
		4/14/14	8.2	2.6	0.32	++	0.6++
1873	Tabes	2/27/14	9.3	4.1	0.44	++	0.8++
		3/17/14	8.1	4.1	0.45	++	0.4++
		4/ 3/14	5.9	4.5	0.75	++	0.4++
		4/17/14	5.8	2.3	0.40	++	0.6++
1794	Tabes	2/27/14	7.6	2.7	0.36	++	1.0++
		3/27/14	6.9	2.0	0.29	++	0.8++
1111	Tabes	3/ 3/14	6.0	2.5	0.42	—	2.0++
		3/17/14	6.6	3.1	0.47	—	2.0++
1098	Tabes	2/26/14	7.5	2.5	0.29	—	0.6++
		4/ 3/14	8.2	2.6	0.32	—	1.0++
Average			7.1	3.0	0.42		

Both tables show very clearly that absolutely no relation exists between the amino nitrogen content of the blood or spinal fluid and the Wassermann reaction.

CONCLUSIONS

1. The amino-acid nitrogen of the blood varies within certain definite limits (4.5 to 8.5 mg. per hundred c.c.) in different individuals.

2. A similar variation occurs in the same individual at different times.

3. The amino-acid nitrogen in the spinal fluid in different individuals, and also in the same individuals at different times, varies between approximately 2 and 4 mg. per hundred c.c.

4. The amino-acid nitrogen content of the blood in syphilitics varies within exactly the same limits as in the blood of non-syphilitics. The amino-acid nitrogen content of neither the blood nor spinal fluid of a syphilitic bears any relation to the Wassermann reaction.

5. The conclusion of Kaplan and of Kaplan and McClelland that in patients with syphilis the amino-acid nitrogen of the blood is diminished, and that such determinations may be used as a means of diagnosis, is incorrect.

THE EFFECTS OF COLLARGOL AS EMPLOYED IN PYELOGRAPHY

AN EXPERIMENTAL STUDY*

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Prompted by the report of a number of cases of ill effects, even death, following the injection of collargol into the renal pelvis for roentgenographic purposes, I became interested in the question of whether or not collargol can damage the kidney and can cause death when so injected. With the assistance of Dr. E. W. Schnoor and Miss Elizabeth Byrne, we have attempted to study the question from every angle, employing dogs and measuring the pressure with which the fluid was injected. With the exception of some experiments on pigs' kidneys (removed from the body), reported by Whitman,[1] we are the first to study the question by not only measuring the amount injected, but also observing the effects of varying this quantity, as well as the pressure with which it is injected.

We believe that we are able to show from the lesions found in our experiments on healthy and diseased kidneys injected with various substances (collargol, cargentos and methylene blue) that the majority of the ill effects[2] reported up to the present time have been due to lack of consideration of the fact that when the capacity of the human renal pelvis is exceeded by the amount of fluid injected, and a high degree of pressure employed, the solution is either forced into the loose tissues around the renal pelvis and kidney, or into the renal parenchyma, and from here into the circulation and deposited in various viscera.

TECHNIC

Dogs were employed in all of the experiments. Under ether anesthesia and all aseptic precautions the bladder was opened and a ureteral catheter, which could be boiled, inserted through the vesical orifice of the ureter to be injected, until one could see the location of the eye of the catheter through the intact wall of the ureter above the bladder, in order to watch the first escape of fluid from the catheter. We could thus closely observe the quantity injected into the renal pelvis, and the pressure employed. A mercury manometer, inserted into the column of the solution injected, enabled us to note the slightest fluctuations in pressure. After the fluid had been injected, the catheter was withdrawn and the bladder incision sutured. We were able to imitate perfectly the method of using collargol in the human being. Only one animal out of a total of forty showed evidences of infection, so that we can eliminate this as a factor in interpreting our results. In Experiment 316, as well as in the experimental hydronephrotic and infected kidneys, the solutions were injected directly into the proximal end of the ureter.

PLAN OF THE EXPERIMENTS

The average capacity of the renal pelvis of the dog is from 2 to 2.5 c.c. We thought that by filling the renal pelvis with this amount, or one slightly above it, we could best imitate the gravity method which is correctly held to be least dangerous in the human being. We found that when a buret filled with collargol was raised to a level of 3½ feet above the operating table, the fluid escaped under a pressure of 29 mm. Our first series corresponds to the average gravity injection, as given daily. In the second series the quantity and pressure were increased moderately, and in the third series both were increased considerably, in order to ascertain as closely as possible how much pressure, and the amount of excess in fluid beyond that of the ordinary capacity of the renal pelvis, would be required to force the solutions into the kidney and its vessels. We killed the animals at different periods after the injection, in order to study the question of permanent injury to the kidney and other viscera. In addition to collargol in 10 and 20 per cent. solution, we undertook experiments with cargentos, a salt containing 50 per cent. silver, and also with methylene blue. In our earlier experiments only the injected kidney was examined. It was not known at that time that the collargol entered the blood-current when too much pressure or too large a quantity was employed, since our article[3] of May 2, 1914, was the first publication to describe such an occurrence.[4]

The first series shows that the injection of collargol under a pressure not to exceed 30 mm. will fill the renal pelvis. Only a minimal amount of the collargol enters the kidney parenchyma or infiltrates the peripelvic tissue. An elevation of 3½ feet of a column of fluid causes it to flow at a pressure of 29 mm.; hence this first series proves that the gravity method is the safest one to employ in injecting any solution into the renal pelvis.

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* From the Morris Institute for Medical Research of the Michael Reese Hospital.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

[1] Whitman: Referred to by Tennant: Ann. Surg., lvii, 888.

[2] It will be impossible to quote the published reports of ill effects, owing to lack of space in the present article. Mason (Dangers Attending Injections of the Kidney Pelvis for Pyelography, The Journal A. M. A., March 14, 1914, p. 839) has reviewed these quite fully, and we will review them in our paper, when published in full.

[3] Eisendrath, Daniel, N.: The Effects of Injecting Collargol into the Renal Pelvis, The Journal A. M. A., May 2, 1914, p. 1392.

[4] At the time Experiments 304 and 310 were performed, we had not read the article by Rehn, Jr. (Centralbl. f. Chir., 1914, No. 4), in which he simply mentions the fact that he found collargol in other viscera, but does not give any details and has not published them up to the present time.

SUMMARY OF EXPERIMENTS

Series 1.—Ten per cent. collargol injected under low pressure.

There were six experiments in this series, the quantity injected varying from 2.25 to 3 c.c., that is, just equal or slightly beyond the capacity of the renal pelvis. A distinct resistance was felt when 3 c.c. had been injected, showing that no more collargol could be safely introduced into the renal pelvis. The pressure under which the collargol was injected varied from 13 to 32 mm. The first dog was killed immediately and the other five 24, 48, 72, 96 and 144 hours, respectively, after the injection. The only three findings of value were in the following three experiments:

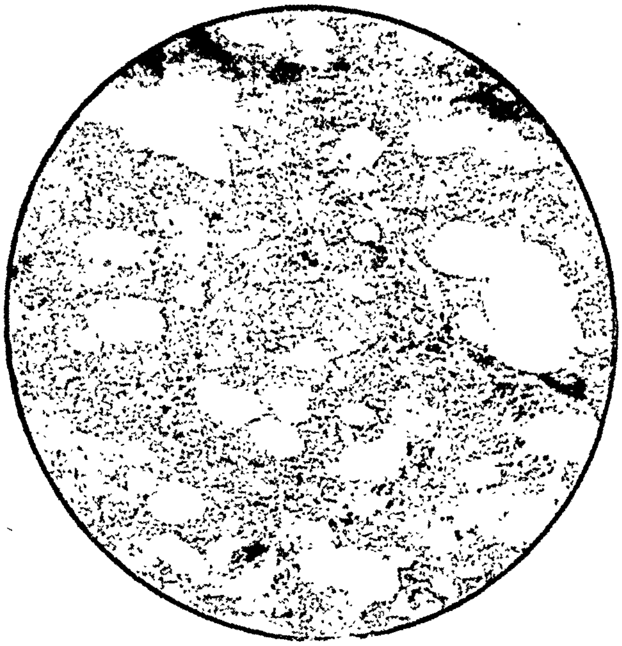

Fig. 6.—Lung from Experiment 327, showing hemorrhagic infarct around collargol.

Experiment 302: 2.75 c.c. at 13 mm. Killed immediately. Small amount of collargol in the interstitial tissue of medulla of kidney.

Experiment 306: 3 c.c. at 20 mm. Killed after 24 hours. Slight peripelvic collargol deposits.

Experiment 332: 2.4 c.c. at 32 mm. Killed 144 hours after injection. Kidney showed marked inflammatory reaction in medulla of kidney, and evidences of slight hemorrhages into lungs and spleen. Hemorrhages into the interstitial tissue of the kidney and into the glomeruli were found so constantly, even when sterile water was injected, that they were thought to be due to trauma rather than to the collargol.

Series 2.—Ten per cent. collargol injected under moderate pressure (30 to 70 mm.).

Experiment 313: 4 c.c. at 50 mm. Killed 24 hours later. Small amount of collargol in interlobular septa of lungs.

Experiment 314: 5.5 c.c. at 45 mm. Killed 48 hours later. Small amount of collargol in interstitial tissue and in blood-vessels of the injected kidney.

Experiment 322: 3 c.c. at 45 mm. Killed 96 hours later. Hemorrhages into renal parenchyma more marked than usual.

Experiment 319: 5 c.c. at 50 mm. Killed 144 hours later. Small amount of collargol in interstitial tissue of the kidney; also present in small amount in lungs and liver.

Experiment 317: 5 c.c. at 52 mm. Killed 20 days later. Small amount of collargol in the kidney, undergoing resorption, and in vicinity of this collargol there are evidences of intense inflammatory reaction. Small amount of collargol in the interlobular septa of lungs. Subcapsular and parenchymatous hemorrhages in spleen.

Experiment 312: 4 c.c. at 47 mm. Killed 30 days later. No collargol found, but injected kidney showed intense inflammatory reaction in the cortex.

COMMENTS ON SECOND SERIES

In Experiment 313, in which the capacity of the renal pelvis was slightly exceeded (4 c.c. at 50 mm. pressure), there was a small amount of collargol deposited in the lungs. In 314 (5 c.c. at 45 mm.), collargol was found both between the tubules and in the blood-vessels of the kidney. In 322, there were evidences of intense inflammatory reaction when the animal was killed 96 hours later. The same is true in 317, in which animal was killed 20 days after injection, as well as in 312, killed 30 days after injection. Evidently the deposits of collargol caused an intense inflammatory reaction, as the result of the presence in the tissues of a foreign substance. In 319, the collargol was forced into the renal blood-vessels and was deposited in small amount in the lungs and liver. In 317, there was collargol in the lungs and evidences of hemorrhages in the spleen.

Series 3.—Ten per cent. collargol injected under high pressure (70 to 140 mm. Hg).

Experiments 304 and 310 were reported May 2, 1914, as a preliminary communication.[4]

Experiment 304: 20 c.c. at 100 mm. pressure. Dog died five minutes after injection was begun. Injected kidney showed many black areas which proved to be collargol lying both within the tubules and in spaces between the tubules, which were of traumatic origin (Fig. 1). Lungs were of a deep black, and sections taken from all lobes showed numerous capillary and larger vessels filled (Fig. 2) with the collargol in the form of emboli. The liver and spleen both contained much collargol. The surface of the liver (Fig. 3) had many yellowish-brown nodules, due to collargol deposits or infarcts and the collargol was found within the lumen of many hepatic vessels (Fig. 4). The spleen and lungs showed in addition to the collargol, many hemorrhages.

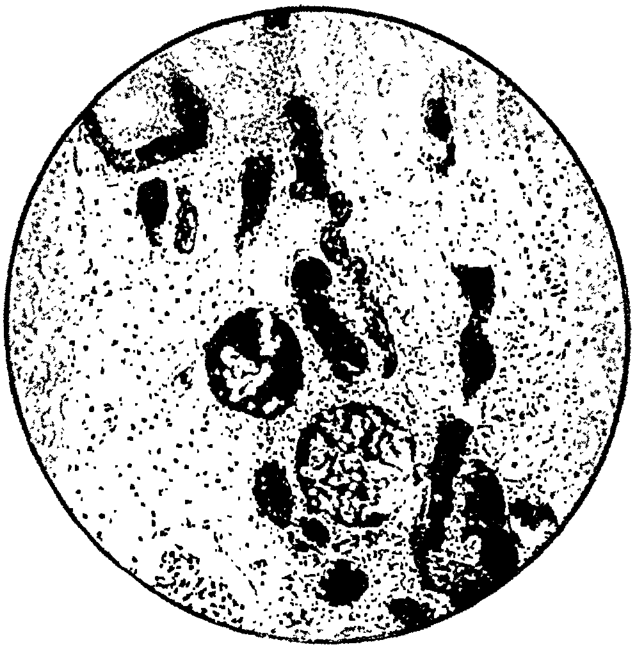

Fig. 9.—Kidney from Experiment 329; tubules and glomeruli filled with 20 per cent. collargol.

Experiment 310: 30 c.c. at 100 mm. pressure. Animal died thirty minutes later. There were a number of collargol infarcts in the injected kidney and the microscopic appearance was the same as in 304. The lungs showed much less collargol than in 304, but there was an extensive edema of the lower lobes. The liver and spleen showed evidences of hemorrhages, but contained less collargol than in 304. This was due to the fact that much of the collargol had escaped into the tissues around the renal pelvis, and thus less entered the circulation than in 304. Death was undoubtedly due in this dog to the acute pulmonary edema, whereas in 304 it was the direct result of so many capillaries being filled by the collargol emboli.

In Experiment 316 the collargol was injected directly into the proximal ends of both ureters, in order to observe the rise in pressure as the quantity injected was increased. The pressure when 5 c.c. had been injected was 48 mm., and rose gradually until it was 98 mm., when 10 c.c. (four times the capacity of the renal pelvis) had been injected. Both kidneys showed the typical collargol deposits and infarcts. In other experiments of this series, in 303 (7 c.c. at 80 mm.) the kidney showed a typical collargol infarct when the organ was removed fifteen minutes later. In 321 (6 c.c. at 94 mm.) the dog died seven days after the injection. The lungs showed extensive ecchymoses on the pleura and pneumonia in the stage of red hepatization in several lobes. The close proximity of a number of particles of collargol to the pneumonic areas (Fig. 5) justifies, we believe, the conclusion that the collargol played an important part in the etiology. In one section the collargol is seen to be adherent to the intima of a vessel close to a pneumonic area. In 310, in which the pulmonary edema was the cause of death, the collargol was, we believe, an irritant. In 327 (Fig. 6) the lung showed numerous hemorrhagic infarcts directly around the collargol deposits in the lung. From the constancy of our findings, there can be no doubt of the direct causal relation of the collargol to all of the acute pulmonary changes.

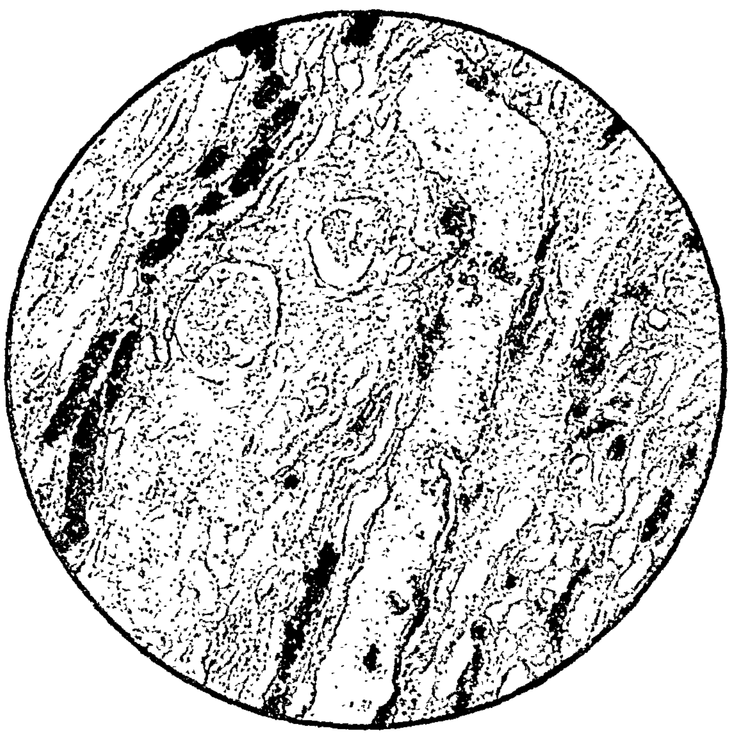

Fig. 10.—Kidney from Experiment 329, showing collargol breaking into vessel.

Experiment 336: Injection of 20 c.c., 10 per cent. collargol directly into the iliac vein. This experiment was to determine whether a substance like collargol would cause death, as in 304, when injected directly into the systemic circulation. The dog died in four minutes; respiration stopped before the heart did. The lungs presented almost the same appearance as in 304, and also a large hemorrhagic infarct. All of the viscera and the blood in the vessels contained the collargol. Sections taken from the lungs showed innumerable blood-vessels (Fig. 7) filled with collargol emboli, as in 304. The vessels of the liver were also filled with the collargol (Fig. 8). This experiment corroborates our 304, showing that death can be caused by the collargol obstructing so many pulmonary capillaries that respiration is impossible.

The occasional clinical use of stronger solutions of collargol led us to inject 20 per cent. collargol in Dog 329. The results were the same as when the weaker solution was employed. The animal died twenty-four hours after 37 c.c. had been injected at 140 mm. pressure. The tubules and glomeruli were filled to an even higher degree (Fig. 9) than in Series 3. In one of the sections the collargol could be seen entering the vessel and lying within it (Fig. 10). Death was due to acute pulmonary edema, and there was much collargol in the interlobular septa, as well as in the liver and spleen.

Series 4.—Cargentos used instead of collargol.

To see how other silver salts which have been recommended as substitutes for collargol would act, we injected cargentos, which contains 50 per cent. silver, into three dogs. In Experiment 326 the animal died twenty-four hours after 17 c.c. of a 10 per cent. solution had been injected at 140 mm. The tubular deposits and large infarcts (Fig. 11) appeared in the same manner as with collargol, and in addition there was a marked inflammatory reaction. The spleen, liver and lungs showed many hemorrhagic areas, and there was a well-marked pneumonia. In Experiment 334 the dog died on the fourth day after 6 c.c. of a 25 per cent. solution had been injected at 80 mm. The pneumonic changes were even more advanced than in 326. In 333 the dog died twenty minutes after 14 c.c. of 25 per cent. cargentos had been injected at 100 mm. In addition to the cargentos forming perfect casts of the urinary tubules (Fig. 12), the lungs contained much of the cargentos.

Series 5.—Collargol injected into kidneys in which experimental hydronephrosis and infection had been produced.

Experiment 327: 20 c.c. of 10 per cent. collargol at 196 mm. injected into ureter of hydronephrotic kidney of three weeks' duration. Animal died in ten minutes. There was a large hemorrhagic infarct in the lungs, and in sections much collargol was found in the lungs, especially near the infarct (Fig. 13). The kidney showed a few collargol streaks, but sections revealed the fact that the tubules and interstitial tissue had resisted the entrance of collargol far better than a nonhydronephrotic kidney. There was comparatively little collargol in the tubules or between them. In Experiment 331 an experimental hydronephrosis and ascending infection had followed implantation of the ureter into the bowel, and injecting its proximal end eighteen days later with 40 c.c. of 10 per cent. collargol at 140 mm. pressure. Animal died twenty-four hours later. Here, again, the kidney resisted the collargol better than a normal one, and the parenchyma contained only a relatively small amount of the fluid (Fig. 13). There were many hemorrhagic infarcts in the lung and pneumonic areas. There was a little collargol in the lungs, liver and spleen.

Series 6.—Methylene blue used instead of collargol.

We thought that neutral substances like 10 per cent. methylene blue might cause the same changes and verified this by injecting it in the same quantities and at similar pressures as were used with collargol and cargentos. The animals died within from five to twenty minutes, and the hemorrhagic infarcts and embolic plugging of the pulmonary vessels resembled in every way those observed with the silver salts.

COMMENTS ON EXPERIMENTS

In Series 1, in which the amount of collargol injected did not exceed the capacity of the renal pelvis, and only enough pressure was used to distend it lightly, practically no deposits in the kidney occurred, and no damage to its epithelium. When the pressure and quantity were increased, as in Series 2, the collargol was found more constantly, either in the kidney or lungs, or both. In 314 it was found in the blood-vessels of the kidney. In animals which lived for some days there was ample evidence that some irritant had been present, and had been the cause of an intense inflammatory reaction. The more severe effects which collargol and cargentos can cause in both normal and pathologic kidneys are well shown in the remainder of the experiments. There can be no doubt that when more fluid is injected than the renal pelvis can hold, or it is injected with too much force, then the tension within the renal pelvis rises to such an extent that the fluid, whether it be collargol, cargentos or methylene blue, or any other substance sufficiently concentrated, is forced into the interstitial tissue and tubules, and soon breaks into blood-vessels and is carried by the veins to the lungs, and produces either embolism with immediate death, or an acute pulmonary edema, hemorrhagic infarct or a pneumonia. The photomicrograph shown in Figure 12 illustrates how the collargol is forced into the vessels and carried to distant parts. If carried to the liver, spleen, brain and other organs, the collargol is either deposited in the parenchyma or causes infarcts or hemorrhages.

The experimental work of Strassman and Wossidlo will be discussed in detail when this paper is published in full. Rehn's investigations have been published only in a preliminary form. The experiments of these three surgeons were all performed without taking into consideration the question of the pressure with which the fluid was injected. This, as we have attempted to show, is the key to the entire question. In other words, *collargol will not injure either the healthy or diseased kidney if care be taken not to inject more than the renal pelvis can hold.* If this limit is exceeded, or the fluid injected with too much force, serious results may follow, such as (*a*) larger (infarcts) or smaller deposits in the kidney and perirenal or perinephritic tissue; (*b*) infarcts or deposits or hemorrhages into the spleen and liver, and (*c*) various lung changes, such as embolic plugging of the vessels, hemorrhagic infarcts, acute pulmonary edema or pneumonia.

The use of collargol and cargentos in pyelography does not deserve to be condemned. They are perfectly safe aids to a most valuable method of diagnosis, when employed with care. Our experiments clearly show the dangers of injecting any fluid, even concentrated methylene blue, into the renal pelvis when too great a quantity and too much pressure are employed.

30 North Michigan Avenue.

ABSTRACT OF DISCUSSION

Dr. W. F. Braasch, Rochester, Minn.: Dr. Eisendrath has certainly shown conclusively that collargol or any other solution of colloidal silver, when injected with pressure, can destroy the kidney tissues. In some two thousand clinical cases in which we have employed pyelography, I am not aware of having caused any damage to the kidney by means of overdistention. Any possibility of such danger is obviated by the gravity method. As Dr. Eisendrath has emphasized, if one does not use too much pressure there is no reason why any trauma or destruction of the kidney tissue should follow the injection of the solution. It has been my experience, however, that we do have trouble in certain cases when the injected silver is not drained out afterward. I have seen necrosis in four cases of hydronephrosis in which the collargol did not drain and the contraction of the pelvis forced the collargol up into the tubules and caused focal necrosis. All of these kidneys were primarily surgical, and their removal would probably have been necessary. Undoubtedly this is a source of danger. Therefore, we should take care not to inject in any case of hydronephrosis in which the injected solution cannot drain afterward and whenever the diagnosis can be made without a pyelogram. In following out a series of experiments on dogs along this line recently, Dr. Mann and I have injected different preparations of colloidal silver into the pelvis and ligated the ureter a short distance below. We found that focal necrosis will result in the parenchyma in practically every case. The various colloidal preparations all act in about the same way. In search for a harmless substance we also employed an emulsion of silver iodid, 5 per cent., and in seven dogs injected with this we found no evidence of focal necrosis. The great objection to silver-iodid emulsion, however, is that it has to be used with a syringe, since it is too viscid to employ by the gravity method. Pyelography is not to be employed with impunity, and should be used only in selected cases. Its use is only excused when the diagnosis cannot be made without it. If we carefully select our cases, and do not use colloidal silver in conditions in which it cannot drain after injection, and if we use the proper technic, there is no reason why an experienced cystoscopist should have serious consequences from pyelography. I believe, however, that we should continue our search for a harmless preparation which could be employed more generally.

Dr. A. J. Crowell, Charlotte, N. C.: I was glad to hear Dr. Braasch say that we ought to search still further for a drug that would be less harmful to the kidney in pyelography. I disagree with Dr. Eisendrath that silver or collargol is not dangerous. I had, about two months ago, the misfortune to lose a patient on whom I used collargol. The patient was referred to me for a roentgenogram and then for ureteral catheterization and collargol injection for diagnosis. When the patient was admitted to the hospital a picture was immediately taken for kidney stone, which proved to be negative. This patient gave kidney symptoms. The ureters were catheterized. The urine coming from the right ureter was perfectly clear and came away intermittently. That from the left was continuous and cloudy, which condition was afterward proved to be caused by pus, and a few tube casts were found, both hyaline and granular. The catheter in the right ureter was removed after it had remained for two or three minutes. About 3 ounces of urine had been withdrawn from the left kidney—in fact, the catheter was left in until the urine came away intermittently. I estimate that at least 1½ ounces of urine was secreted during this time. Therefore, I had no hesitancy in injecting into the pelvis of that kidney 12 c.c. of a 10 per cent. solution. This was injected with a syringe, but very slowly, and on the first indication of discomfort the patient was instructed to notify us, which she did, and the picture was taken immediately. The catheter was left in for ten minutes at least, for two reasons: first, to allow the collargol to return, which it did very readily; secondly, to allow the time for the development of the roentgenogram. The picture was reported all right, the catheter was removed, but the patient suffered such excruciating pain that it became necessary at once to give a hypodermatic of morphin. She was taken care of as best we could by various remedies for the relief of the pain and to overcome shock. She remained a very sick woman until the fifth day when she died. There was almost complete suppression of urine from the very beginning. The greatest quantity of urine secured as ascertained by catheterization in any twenty-four hours was 3 ounces. I was unable to secure a complete post-mortem, but obtained the kidneys. Finding collargol in the opposite kidney of this patient, suggested trying experimental work on dogs to ascertain the distribution of the drug. I injected 10 c.c. into the pelvis of the right kidney of one dog and 5 c.c. into the right kidney of another. I injected 10 c.c. into the kidney pelvis of one and it died in five minutes. The other we killed in two days. We found collargol in the lungs, kidney, liver, spleen and muscles of the heart. I have no specimens of the patient who died, save from her kidneys, but why she should die from suppression of urine when only one kidney was injected is a question. Post-mortem examination showed the capacity of the woman's kidney to be 1½ ounces. I injected only 12 c.c. of the solution, so it was not full. On the second or third day after the injection she developed symptoms of purpura. Even where she was given hypodermatic injections, there was an extravasation of blood under the skin. She suffered considerable hemorrhage from the mouth and bowels after the second or third day.

Dr. F. R. Hagner, Washington: I saw in consultation a case in which a 25 per cent. argyrol solution had been used. This was done by Dr. G. Brown Miller of Washington, an able gynecologist. He assured me that he put in less than 8 c.c. of argyrol. This woman was about 70 years of age and was supposed to have a tumor of the kidney. Immediately after the injection she complained of discomfort and pain in the precordial region. For twenty-four hours she had practically complete suppression of urine. In the next twenty-four hours she excreted approximately 16 ounces. About the third day she began to pass blood by the bowel, her stomach became very much distended, a stomach-tube was passed and her stomach was found filled with blood. She had hemorrhages from the gums, nose, and blood in the urine and petechial hemorrhages over the entire body. When I saw her I suspected she might have mercuric chlorid poisoning. It looked like a case of metallic poisoning. Has any one seen any symptoms of metallic poisoning in any of these cases in which the colloidal silver salts have been used? We were unable to get a necropsy in this case.

Dr. H. D. Furniss, New York: I had a patient who gave much the same history as the patient reported by Dr. Hagner. She was injected with collargol, and within a few minutes she had an immense amount of pain. Following that the condition cleared up, but on the third day I explored the left kidney and found an anomalous blood-vessel running to the lower pole. Three days after the operation and five days after the injection the patient had suppression of urine, which lasted for eight days, and during that time there was no more than 1 ounce excreted in any one day. At the end of that time I decapsulated the right kidney. I was afraid of getting too much hemorrhage from the side I had previously operated on. Within twenty-four hours after the decapsulation urine began to be excreted, and was excreted in fairly good amount for the next four days, at the end of which time she died; but after the operation this patient had hemorrhages from the nose and mouth, just as Dr. Hagner has reported. Collargol is sometimes used therapeutically intravenously, in a percentage which is a solution. In these cases in which it is injected into the kidney it is in the form of an emulsion, and it has struck me that that probably accounts for the emboli that are found.

Dr. Martin Krotoszyner, San Francisco: I made an observation similar to that of Dr. Hagner in a woman of about 40, who after injection of a small amount of a 20 per cent. cargentos solution developed symptoms similar to those described by Roessle, and which this author considered to be due to an acute silver toxemia or argyria. I cannot share Dr. Eisendrath's optimism regarding the avoidance of all dangers connected with pyelography by regulating the pressure in injecting the silver salt. Shortly before leaving home I injected in a man of 45, with a unilateral pyuria of doubtful character, under very low pressure, 2 or 3 c.c. of a 10 per cent. collargol solution. In spite of the utmost precaution in the procedure and in spite of discontinuing the injection at the first sign of discomfort on the part of the patient, the exposed kidney presented a focus on its capsule which was proved by the pathologist to be due to penetration of collargol through the renal tubules. This observation and similar ones recorded in the literature by others prove that the last word on the cause of pyelographic mishaps is not yet spoken. It is to be hoped, though, that the dangers of pyelography will be avoidable so that this important diagnostic method, which we would not like to dispense with in our armamentarium, will not become entirely discredited.

Dr. Frederick R. Charlton, Indianapolis: I report a death from collargol. This patient had a tumor mass (necropsy was not obtained) perhaps the size of a small grapefruit, supposedly hydronephrotic. This was a year ago, before the danger of using a piston syringe was so fully understood. We injected 15 c.c. of a 25 per cent. collargol solution. Before the injection was completed the patient was complaining of distress. I waited for a moment until he was easier, and then continued the injection until I had injected the full 15 c.c. I labored under the impression at that time that perhaps it would be somewhat difficult to get a dangerous pressure from that amount of fluid, feeling that a certain percentage of it would find its way backward down the course of the ureter along the catheter. That belief does not seem to be borne out by later experiences. We took our roentgenogram, getting an excellent one, showing extravasations of collargol well out toward the cortex and outlining a large mass of some kind. Our patient went into collapse and died in eight hours. This man had walked into the Roentgen-ray laboratory, so that the case was a distressing one, and we could not get a necropsy for obvious reasons. I felt at the time that perhaps it was due more to cardiac collapse than anything else. Granting that I had produced some small rupture in the pelvis, I could not see why that should cause immediate death. I did not feel at the time that collargol was to be regarded as dangerous from the point of view of its drug properties. And so in trying to explain my patient's death I felt that perhaps we had a bad myocardium, that I had produced just enough pain to cause considerable shock, and that his heart had not been able to rally after such shock.

FRACTURES OF THE INFERIOR MAXILLA

A REPORT OF 1,065 CASES TREATED*

HENRY S. DUNNING, M.D., D.D.S.
NEW YORK

During the last eight years I have had quite an opportunity of studying fractures of the maxillary bones at the New York College of Dentistry. At the college we have a large daily oral surgery clinic under the direction of Prof. Faneuil D. Weisse and myself, which is fed by the outpatient department of nearly all of the large hospitals of Manhattan. Since the founding of the oral surgery clinic at the college in 1906, we have treated over 1,200 fractures of the inferior maxillary bone, but I am sorry to say that at this time I can present figures taken from only 1,065 cases, as some of the records are not very complete.

Stimson says, "By fracture, in the surgical sense, is meant the breaking of a bone or cartilage." The liability of a bone to fracture depends on its shape, size and degree of exposure to external violence or trauma, and also to its exposure to extreme muscular action. On account of its peculiar horseshoe shape, its prominence and its unsupported position, and the fact that it is somewhat weakened by the carrying of teeth that often become diseased, the inferior maxillary bone is the most frequently fractured bone of the face.

Stimson shows that in 14,566 fractures of all the bones of the body treated at the Hudson Street Hospital (1894-1905), 502 of these were fractures of the inferior maxilla. From his figures this bone is the tenth on the list as being most often fractured. Another reason for its frequency to fracture is its weakened condition because of physiologic absorption after teeth are extracted. Most fractures of the body of the bone proper, or of the rami, are complete fractures, and it is the complete fractures that will be discussed to-day.

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* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

TABLE 1.—INJURY AND CAUSES IN 1,065 CASES OF FRACTURE OF THE INFERIOR MAXILLA*

Injury and Causes	No.	Per Cent.
Blow of fist	495	46.5
Run over by wagon	38	3.5
Elevator	14	1.5
Gunshot	5	0.5
Pathologic fracture	2	0.2
Extraction of teeth	5	0.5
Edentulous mouths	10	1
Miscellaneous	238	21
Kicks	45	4
Fall	140	13
Baseball bat	13	1.5
Club	32	3
Thrown ball	7	0.6
Railroad accidents	2	0.2
Blackjack	17	1.6
Cranking machines	3	0.2
AGE		
From 1 to 10	68	6⅓
From 10 to 20	93	8.5
From 20 to 30	298	28
From 30 to 40	340	32
From 40 to 50	184	17
From 50 to 70	82	7.5
SEX		
Male	992	93
Female	73	7

* This and the following table comprise a report of 1,065 cases of fracture of the inferior maxilla treated at the New York College of Dentistry during the years 1906-1913, taken from the service of Faneuil D. Weisse, dean and professor of oral surgery, anatomy and surgical pathology.

The fracture of the alveolar process is very numerous and occurs often on the extraction of a tooth. Complete fractures of the body of the bone are generally vertical in direction, and about 98 per cent. of these fractures are compounded to the mouth, when there are teeth present. This is due to the fact that most of the fractures of the body of the bone occur at the alveolus of a tooth, and runs along the tooth cavity to its end, and then enters the body of the bone in the same direction. The fracture of this bone is the most often compound fracture of any in the body, owing to its thin covering of gum tissue and mucous membrane, and of course, for this reason, it is the most often infected fracture. It is not often compounded to the face. The vertical direction is also due to the fact that the bone is most often fractured by a blow that bends the bone at right angles to its long axis. A blow on one side of the jaw will sometimes cause a fracture on the opposite side in the same way that a blow on a barrel hoop will be felt at a point opposite the point where the blow is received. This is called "fracture by *contre coup*."

In edentulous mouths the fractures are usually simple ones, and are not so apt to be vertical as there is no tooth cavity to weaken the bone, and to direct the line of fracture. These often become compound fractures, as the gum is so thin that pressure of an interdental splint often causes a sharp edge of bone to penetrate the soft tissue.

Fractures of the alveolar process are usually in the anterior part of the jaw, where they are more exposed to trauma.

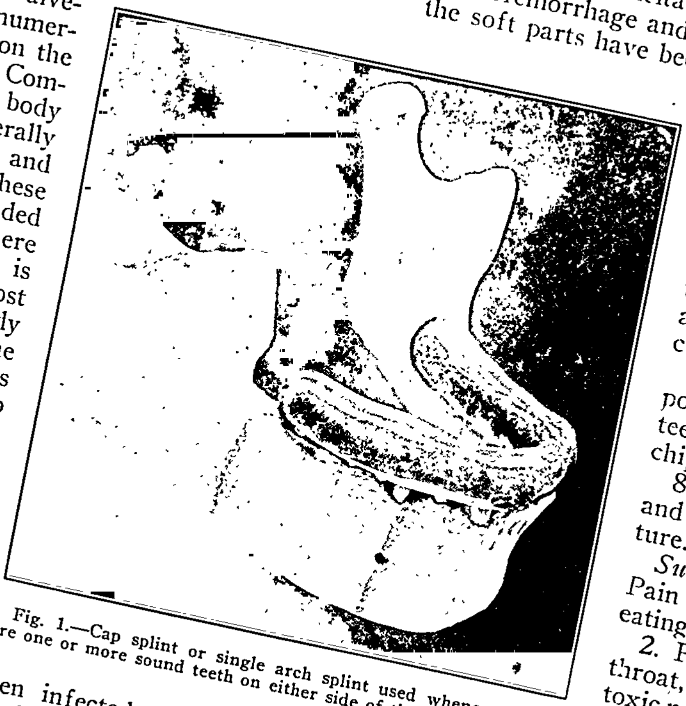

Fig. 1.—Cap splint or single arch splint used whenever there are one or more sound teeth on either side of the line of fracture.

Varieties of Fractures.—1. Complete. 2. Incomplete. 3. Single. 4. Multiple. 5. Simple. 6. Compound. 7. Comminuted or splintered. Any of the foregoing fractures may be complicated when nerves, blood vessels and other structures are involved.

Symptoms of Fractures.—1. Objective. 2. Subjective.

Objective Symptoms.—1. Deformity. Fractured portions of bone in faulty position, malocclusion of teeth; swelling and edema of soft parts, enlargement of glands.

2. Abnormal mobility of the fractured parts of bone or false point of motion.

3. Crepitus. The grating of the fractured end of one bone on another, obtained in complete fractures by holding one fragment of bone firmly between the fingers and moving the other on it.

4. Increased salivation, or drooling, very marked as a rule, and patient is forced to expectorate continually, owing to reflex excitations of vasomotor nerve.

5. Hemorrhage and ecchymosis, often present when the soft parts have been traumatized. The gums surrounding the point of fracture are often discolored and congested, owing to rupture of small capillaries, and extravasation of blood into the tissues.

6. Inability to close teeth together with much force on account of the lack of muscular control.

7. Teeth often loosened at point of fracture, and the teeth often fractured or chipped.

8. Infection and abscesses and necrosis at line of fracture.

Subjective Symptoms.—1. Pain in moving jaw when eating, swallowing, etc.

2. Pain and "soreness" of throat, due to absorption of toxic material by adenoid tissue of throat.

3. Inability to masticate.

TABLE 2.—NUMBER, KINDS AND LOCATIONS OF FRACTURES

	No.	Per Cent.
Number of Fractures:		
Single	951	89
Double	108	10
Triple	5	0.5
Quadruple	1	0.1
Kinds of Fracture:		
Simple	70	6.5
Compound	995	93.5
Location of Fracture:		
Median line	69	6.5
Right Side:		
Lateral region	112	10.5
Cuspid region	96	9
Bicuspid region	122	10.75
First molar region	86	8
Second molar region	123	10.75
Third molar region	66	6
Ramus	26	2.5
Condyle	3	0.6
Coronoid process	2	0.2
Left Side:		
Lateral region	65	6
Cuspid region	87	8
Bicuspid region	108	10.5
First molar region	94	9
Second molar region	144	13.5
Third molar region	70	6.5
Ramus	27	2.5
Condyle	2	0.2
Coronoid process	0	0

4. Pain on pressure at point of fracture.
5. Difficulty in talking and swallowing.
6. Partial and complete anesthesia around point of fracture, due to injury of branches of the third division of the fifth nerve and followed sometimes by slight anesthesia of the tongue.

Causes of Fractures.—1. Predisposing causes. 2. Direct causes.

Under predisposing causes we have:

A. Age. Both extremes of age—the very young child and in the old person. Young children's jaws do not fracture as easily as do those of old people, because the bone is more cartilaginous and springy, owing to the fact that the bones are not completely calcified. Around the ages of 6 to 10 years they are often greatly weakened by the eruption of the second teeth. Spaces are present in the body of the bone to hold these large erupting teeth, and quite often one finds the line of fracture through these cavities. In old persons, of course, all bones are more brittle, more poorly nourished, and the maxilla is often greatly thinned by the absorption that has taken place after the teeth have been lost. The most common age for fracture is between the ages of 30 and 40 years. Men during these ages are more often exposed to trauma, as their activities are greater.

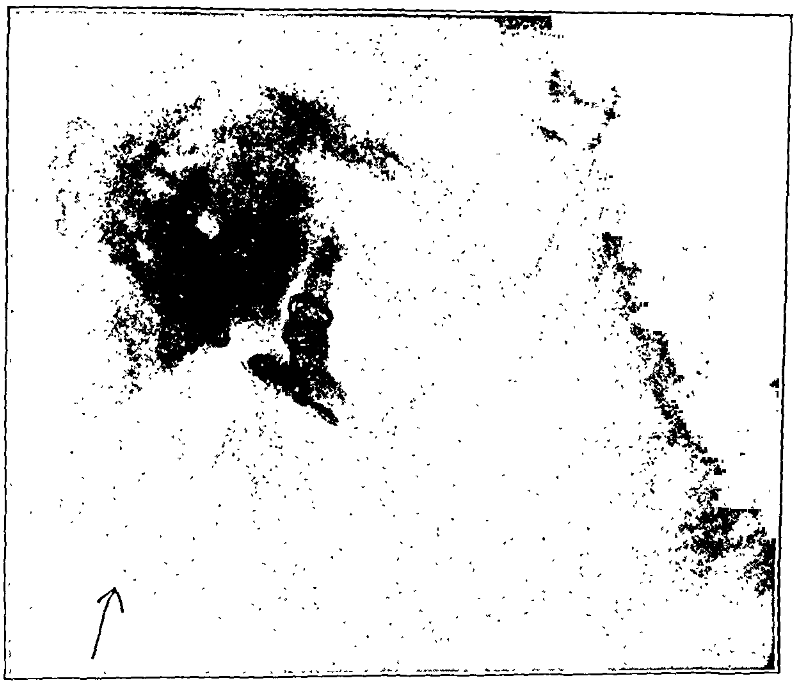

Fig. 2.—Impacted cuspid in line of fracture; a predisposing cause and an obstacle to healthy repair of bone.

B. Disease is another predisposing cause of fracture. Under this heading we have spontaneous or pathologic fracture:

(*a*) Necrosis of bone caused by infection, osteomyelitis, arsenic poisoning and phosphorus poisoning.

(*b*) Syphilis of bone.

(*c*) Tuberculosis of bone.

(*d*) Cysts of various kinds, including dentigerous cysts, in which large cavities are formed in the bone.

(*e*) Osteomalacia.

(*f*) Rickets.

(*g*) Tumors, odontoma, sarcoma, osteosarcoma, etc.

C. Occupation is a predisposing cause. Drivers, longshoremen, *chauffeurs*, waiters, pugilists, etc.

D. Sex: about ten times as common in man as in woman.

Under direct causes:

A. Blows of fist most frequent.
B. Blows of clubs, etc., next .
C. Automobile accidents.
D. Elevator accidents.
E. Railroad accidents.
F. Gunshot cases.
G. In extracting teeth. A complete fracture of the inferior maxilla is caused very rarely by the extraction of teeth, and I can only count one or two cases in which the jaw has been actually fractured by careless extraction.

Location of Fractures.—I do not agree with Stimson when he says that the most common seat of fracture of the lower jaw is at or near the median line (see tables).

Fractures at the *median line* show, as a rule, very little deformity as the parts are pulled on more evenly by the muscles on either side of the line of fracture. These fractures are not so common as in other regions of the jaw on account of the increased thickness at the symphysis.

The deformity at the *canine region* is not so marked as a rule, as the nearer to the median line the more even is the play of muscles, and the less deformity on this account.

The fracture at the *bicuspid region* often shows quite a marked deformity, the anterior fragment being drawn downward and backward, and the posterior fragment upward and outward.

Fractures between the first and second molar teeth may cause a good deal of deformity; generally the bone anterior to the fracture is depressed by the pull downward of the hyoid group of muscles. The posterior fragment is, as a rule, thrown upward by the contraction of the masseter and pterygoid muscles. The anterior fragment is also apt to be drawn backward, partly by the action of the hyoid muscles.

Fractures of the *ramus* itself do not show very much deformity, as the masseter and pterygoid muscles hold the fractured parts together as a rule. In these fractures the median line of the lower jaw does not coincide with the upper, as the whole lower jaw may be drawn over toward the fractured side if there is any overriding of the fractured parts of the bone. It is caused usually by a blow on the side of the face.

Fractures of the *condyle* are not so rare as the figures would show, but are not often diagnosed even with the aid of the Roentgen ray. A straight blow on the chin, forcing the jaw backward, generally causes this fracture, and quite often causes fracture of the base of the skull, by fracturing through the glenoid cavity, and also fracturing into the external auditory meatus. There is often a marked swelling around the point, and bleeding from the ear. Pain on moving the jaw, and the drawing of the entire jaw over toward side of fracture. These fractures are often very serious, one case being reported by Christopher Heath of London. At necropsy it was found that the glenoid cavity had been fractured and the patient had died from a large brain abscess.

Fracture of the *coronoid process* is extremely rare, as the coronoid process is so nicely protected by the zygomatic arch and its contents. The entire side of the face is often crushed without injuring this part of the inferior maxilla. Some authorities assert that the coronoid process is fractured by the sudden contraction of the temporal muscle, but this has not been proved conclusively.

Fractures posterior to the *third molar* at the junction of the ramus and the body of the bone are quite numerous, and the fractures in these cases are often in an oblique direction. Displacements in these cases are not very marked, as the parts are held together by the masseter and internal pterygoid muscles.

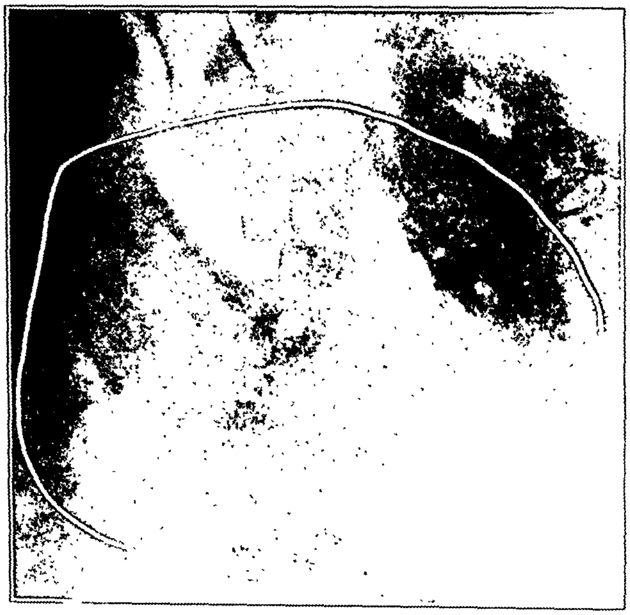

Fig. 3.—Fracture of tooth and jaw; tooth becomes infected and must be removed.

Single and Multiple Fractures.—Single fractures of the jaws are, of course, more common, but double fractures are frequently seen as shown by my tables. Triple fractures are quite rare and I have seen only four or five in the foregoing series. Quadruple fractures are extremely rare, and I have seen only one case. Teeth are often loosened and fractured in complete fractures of the bone. Multiple fractures are generally more painful, owing to the fact that there is usually more trauma, and the fractured ends of bone impinge in more than one place on the inferior dental nerve. In these cases, when trauma has been great there is often an area of anesthesia around or near the line of fracture. This condition often remains long after the jaw has united.

The location and number of fractures of the lower jaw depend a great deal on the articulation of the jaws, and to the arrangement of the occluding teeth. Also to the manner in which the trauma is produced. Slight dislocation of the bone often occurs when the bone has been fractured in more than one place, especially when the fractures are bilateral, as the shape of the bone is not supported and its arch collapses. By the play of the powerful hyoid muscles, the bone is then drawn downward and the condyles are often displaced slightly from the glenoid cavities.

TREATMENT

In treating fractures of the jaws the general hygienic condition of the mouth must be carefully considered and the general physical condition of the patient noted. The teeth should be cleansed first of all—not too minutely removing all calcareous deposits, but the soft food particles and infectious material should be removed from the teeth and soft parts. The gums and teeth should be cleaned every two hours by means of cotton swabs on a stick soaked in hydrogendioxid and water (equal parts). A roentgenogram should now be taken. The next step should be the extraction of any broken-down decayed roots, and any loose teeth near the point of fracture. If these are not removed they often cause abscesses which are generally very troublesome. After the mouth is rendered as clean as possible, lacerations of gums and soft parts have been treated, and roots have been removed, the next important step is to consider the means of proper coaptation and fixation of the bony parts.

If there is very much edema and swelling of the soft tissues, it is sometimes well to apply hot or cold compresses, and wait until the swelling subsides, meanwhile keeping the mouth clean, and the jaws held together with a Barton bandage.

In taking up the matter of fixation of the bony parts, we must consider the mechanics of the case. We must think of what forces are going to act on the different parts of the bone, and how much strength it will require to hold the fractured parts together for a given time.

It is comparatively easy to immobilize a fractured leg or arm, but a different story to keep the inferior maxilla from moving. The inferior maxillary bone is moving continually. The powerful muscles of the jaws are pulling and contracting in different directions all the time. The fractured parts move every time the patient eats, swallows, coughs, talks, sneezes, etc., unless held by a well-constructed mechanical appliance. We must remember that the average splint will remain in the mouth about thirty days under more or less constant strain. These appliances should be strong, comfortable and as small as possible, and should be arranged so that the patient can chew with splint in position if possible. Of course the articulation of the teeth should be carefully studied and the functions of jaw and teeth accurately restored as a final result.

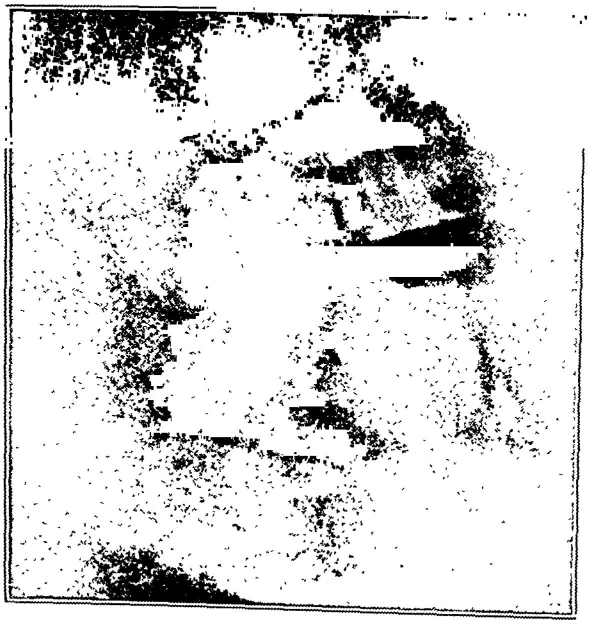

Fig. 4.—Gunshot fracture; cap splint in position.

In discussing the actual method of splinting fractured jaws it will be well to consider again the location of fractures.

In fractures of the *median line,* when there is not much deformity, and when there are one or more sound teeth on either side of fracture, the best method to adopt is the use of a cap splint or single arch splint made of rubber or metal. Wires or interdental splints should never be used in these cases, as they are clumsy and dirty, and the patient is unable to chew with them.

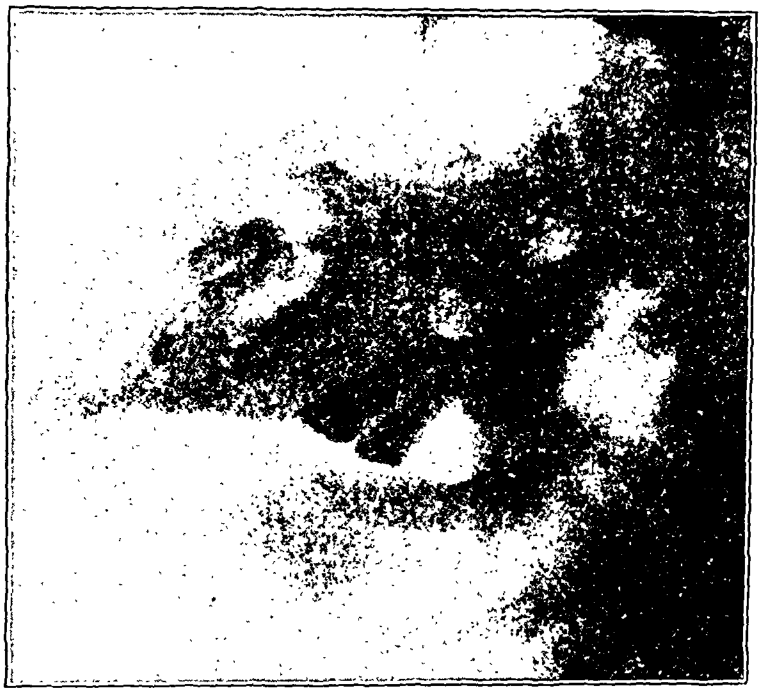

Fig. 5.—Pathologic fracture; no history of any trauma, but long history of chronic abscesses of jaw. Fracture occurred while patient was eating crust of bread.

In fractures at the *molar region,* when there are one or more good teeth, the cap splint can be used, but if the teeth are not strong, wiring the entire lower jaw to the upper is a good procedure for about ten days, until there is partial union, and then the cap splint may be put on. When there is much deformity in this case, wiring the upper and lower jaw together, after applying Angle's bands, is a good plan. Mouths become very foul, and septic poisoning of the entire system may follow and also infection of the respiratory organs when the jaws are wired together for a long period. Carl Beck reports a case of inspiration pneumonia which ended fatally because of the filthy condition of a mouth resulting from the fracture of the inferior maxilla.

Fractures *back of the third molar,* and in the ramus are best treated by interdental splints, and wiring jaws with Angle's wires. The wiring method is the best if there is much deformity, as sometimes it is difficult to force a jaw into an interdental splint and hold it there with a bandage, especially if the deformity is marked.

I disagree with Frederick J. Cotton when he advises the open operation and surgical wiring of fractures in this region. It is in most cases unnecessary. It is of course impossible to hold the ramus by any splint in the mouth, but the anterior fractured end of bone can be held to the ramus by wiring the upper and lower jaws together. In children all fractures are best treated by small modified interdental splints. The teeth are not strong enough to wire and it is difficult and unsatisfactory to cement a cap splint on the teeth.

Surgically wiring through the body of the bone for fractures in any location should not be done. Very poor results are obtained by this method, as most cases terminate in infection and necrosis. We have not had to resort to this treatment in over 1,200 cases.

A method lately used has been the screwing of a Lane plate to the under border of the jaw and good results have been obtained, but this method is unnecessary. Outside splints or apparatus on the face are seldom needed and have not been used at all by us in over 1,000 cases treated at the college.

COMPLICATIONS

Infection is the chief source of annoyance and danger in fracture cases. A large percentage of all compound fractures are infected, and in many of these cases there is necrosis later. Abscesses often form at the point of fracture, and later sinuses form which are apt to break on the face owing to the fact that the pus gravitates downward. Comminuted or splintered fractures are nearly always followed by abscesses and necrosis. Union in these infected cases is generally delayed, and suppurating sinuses may continue for months. A good deal of necrotic bone in these cases is eventually thrown off.

Deep abscesses of the neck are often dangerous, and may extend along the deep fascia into the anterior mediastinum. Edema of the glottis may follow and fatal results occur. Ludwig's angina sometimes results.

Faulty union is quite often encountered, often in children when the bones sometimes unite before one can get on a suitable appliance.

Partial and complete ankylosis often occurs in fracture of the condyles, resulting in loss of function and malocclusion.

Non-union or pseudarthrosis occurs infrequently, generally owing to loss of bone following comminution after infection and necrosis, and perhaps aided by some constitutional disease such as syphilis, tuberculosis, etc.

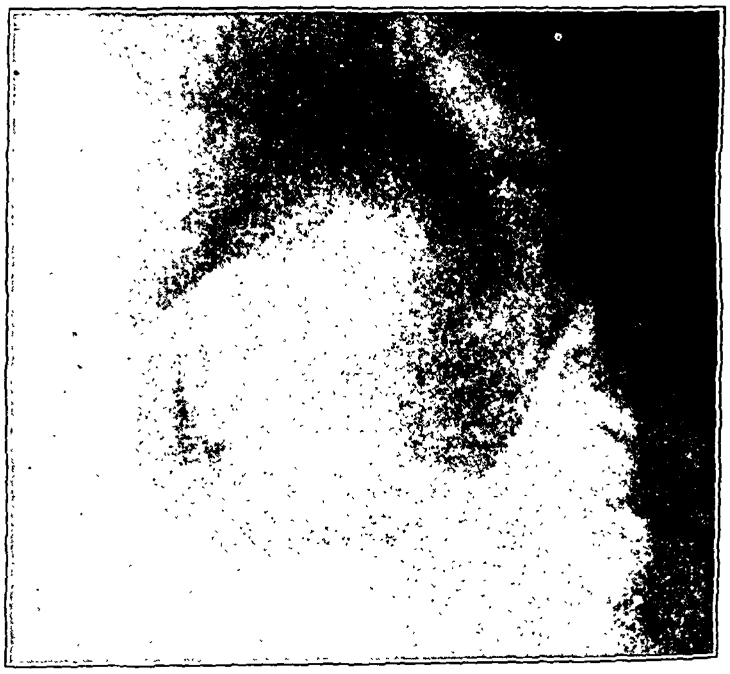

Fig. 6.—Double fracture which was badly infected; shows marked loss of bone because of exfoliation; poor result obtained.

We have had two cases of failure to unite in the foregoing series of 1,065 cases. This condition is also due to fibrous tissue and torn ends of periosteum coming between the edges of the bone and not allowing them to unite. Dr. Walter C. Cramp[1] in 1911 reported a case of rupture of the facial artery due to the fracture of the inferior maxilla. This is a very rare occurrence and I believe the only one on record.

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[1] Cramp, Walter C.: Fracture of Inferior Maxilla Complicated by Complete Division of Facial Artery, Med. Rec., New York, Sept. 2, 1911.

Salivary fistula may sometimes result as a sequence to fracture of the lower jaw, but this condition is extremely uncommon and does not occur unless the soft parts are greatly traumatized.

The diet of patients being treated for fractured jaws and wearing splints is one of a good deal of study and experimentation. It varies a great deal with the individual. My general method is to give the patient as many raw eggs (from four to six) per day and as much milk as possible (from 1 to 2 quarts) and feed every two hours. The diet ought to be carefully worked out for each patient, and the bowels, of course, must be kept open daily by means of efficient laxatives. Patients that have been wired by the Angle method for a month will often lose from 15 to 20 pounds. This, of course, is very weakening and one reason why the Angle wires and bands should not be used if other methods will suffice.

CONCLUSIONS

The inferior maxillary bone on account of its position and shape is the most frequently fractured bone of the face and about tenth on the list of all bones of the body to be fractured. About 98 per cent. of all fractures of the body of the bone are compounded when there are teeth present. And thus it is the most frequent bone to suffer a compound fracture. The fracture of this bone becomes infected on account of the fractures being compound, more than any other bone. The patient suffers great pain from injury to the inferior dental nerve and also from the inability to swallow, eat, drink and cough.

The fracture is about ten times as common in man as in woman. The most common age for the fracture of the bone is between 30 and 40. The most frequent cause of the fracture is a blow of the naked fist. A line of fracture is most often at the region of the bicuspids on the left side. Fractures of the lower jaw depend a great deal on the occlusion of the upper and lower teeth. Fractures of the condyles are rare but are often followed by bony ankylosis. Fractures of the coronoid process are extremely rare and occur only when the zygomatic arch and the side of the face are severely crushed. Great care should be exercised in keeping the mouth clean in the treatment of fractures of the jaw. A cap splint or single arch splint should be used whenever there are one or more strong teeth on either side of the line of fracture to which the splint may be cemented. The interdental splint or intermaxillary splint should be used only in children, in edentulous mouths and in fractures posterior to the third molar when the upper and lower jaws cannot be wired together by means of Angle's wires and bands.

The open operation or surgical wiring of the fractured ends of the bone is unnecesary and generally results in infection and necrosis. The inferior maxillary bone can be more accurately reduced and held in better coaptation than other bones, as direct force can be applied to it by means of appliances attached to the teeth. Non-union very rarely occurs and is generally due to faulty or delayed treatment.

A roentgenogram should always be taken to ascertain the line of fracture, to discover the presence of impacted teeth and to note any infections or abscess conditions at the apicies of the teeth near the point of fracture.

ABSTRACT OF DISCUSSION

Dr. G. V. I. Brown, Milwaukee, Wis.: I wish Dr. Dunning would elaborate a little on a few matters which are sometimes disturbing to people who see fractures only once in a while. That is, the way he meets the conditions of the patient at the time of arrival at the hospital, or at least when called in an emergency. Dr. Dunning spoke casually of the treatment of these cases, but some, I think, require a little more treatment than he described. I find it necessary sometimes to make a temporary splint to give comfort, and I have made it quickly and rapidly out of a modeling compound. It is easily held in position by the use of the Barton bandage and will make the patient comfortable for a sufficient period of time, if necessary, to make it possible to do other work. When a man is thrown from an automobile he usually receives some other injury besides fractures and most of the time those are the things that give us most trouble. So that it is necessary sometimes to take care of cases through a critical period before we can adjust the fractures. I know that in his experience with 1,065 cases Dr. Dunning's observations would be valuable. I would ask him to speak about the manner of adjustment in these cases. I agree with him that, most of the time, a fracture of the condyle will adjust itself, if the rest of the jaw is held, with much less trouble than we can adjust it by wiring. There are conditions, however, due sometimes to the shape of the fracture and degree of the angle of the fracture, that should modify this statement. Because one case adjusts itself nicely without being held and without wiring, it would not necessarily follow that other cases, in almost the same situation perhaps, would do the same, because the angle of the fracture has to do with that. I think we agree that too much is done in fractures of the jaw. The less we do for them after using an appliance which will permit of constant surveillance, as far as possible, and give mobilization, the better. Unfortunately, too much is done in the way of cutting in and wiring the jaw. I do not believe in temporizing at all in the case of a jaw that requires wiring, but I agree with Dr. Dunning that many are wired which should not be. Then again comes in as a part of this question, the manner of adjusting the wires, etc. We should understand the advantage of all methods which have been found most frequently successful.

Dr. M. I. Schamberg, New York: Dr. Dunning's statistics are intensely interesting, and I am sure that his experience in these cases, when we read them over carefully in his paper, should help us materially, particularly those of us who see far fewer cases. I have seen a large variety, but in no sense a large number. I have found, as has Dr. Dunning, the Roentgen ray intensely valuable, and in fact almost essential to absolute accuracy in most of these cases, for the reason that so frequently one will see fractures with spiculae of necrosed bone, or infection, or at times portions of the root, and in one instance both spiculae of bone and a piece of the root protruding into the fractured region, which would retard the healing. Another case to which I refer was a pathologic fracture of marked extent in which the Roentgen ray showed what looked like a compound comminuted fracture of a jaw that was ordinarily thick. I was inclined to suspect that this was produced primarily by arsenic necrosis, and this necrosed bone in the jaw was separated in many places. We dealt with this case in a manner that would not appear to you to be surgically correct, but by which the case culminated satisfactorily. All that appeared to be bone was nothing but a thin matrix and this acted as a matrix for new bone to form. The jaw was splinted on each side, and this patient wore the splint at an old age, resulting in the reduction of the fracture and the formation of a very useful jaw. The splint was removed after the patient wore it for six months and the result on that side is wonderful. I have a similar case in which there was extensive necrosis of the jaw and in which, after a similar appliance was worn, complete regeneration of the bone took place. I believe that much can be done by the application of what may be termed surgical prosthesis without real surgery, to bring about results that heretofore have not been achieved.

Dr. Theodore Blum, New York: This appliance which Dr. Schamberg has spoken of is really not a splint in the ordinary sense of the word, but is the splinting of the jaws by means of a sliding joint. One point with regard to fractures is the splinting of the lower jaw to maintain its mobility, and the same principle is carried out in these pathologic fractures in a different way. At the University of Pennsylvania we were taught by Dr. White that there were three points to be remembered in the treatment of fractures. First, reduce the fracture; secondly, maintain mobilization of the joint on either side of the fracture, and thirdly, maintain nutrition.

Dr. W. Wayne Babcock, Philadelphia: Anyone who has gone to the trouble that Dr. Dunning has in collecting the data on such a large series of cases as this, nearly eleven hundred, every one of a single bone, is deserving of great credit, because it clarifies our knowledge with regard to certain points which have been in dispute, and confirms things which may have previously needed confirming. We are practically agreed as to the plan of treatment; as to the advantage of getting away from some of the older appliances, especially the interdental splint, and relying on operative intervention. Nature has already done about the worst she could do in the accident, and then it has been the tendency for the surgeon to step in and further traumatize the parts, and it is not surprising that necrosis and various ill results have followed. Then again, in these cases sometimes the question arises as to the external wound. In most cases we are safe in cleansing and closing any external wound on the face. If the fracture is compound, let it be compound in the mouth and not from the face; and if one has been careful, as a rule, I believe the face would heal and drainage will take place in the mouth and to the same degree. Then as regards teeth that are somewhat loosened adjacent to the fracture, as a rule, I believe, Dr. Dunning feels that these may be left at the time to see what the results will be. Frequently teeth which look as though they must be sacrificed, if followed up, gradually become fixed; and of course, later on, spiculae of bone or any tooth that has become loosened may be removed at a time when the deformity may not be so great, or at a time when the removal may not bring about a greater deformity.

Dr. Henry S. Dunning, New York: I agree with Dr. Brown that a great many of these patients need attention other than that pertaining to the jaws. For instance, in one case, a woman was hit by a taxicab and among her injuries was the fracture of the jaw. This patient was unconscious when picked up and was suffering from a fractured rib and arm and concussion of the brain. This brings out a point in the paper that many fractures of the condyle are accompanied by fracture at the base of the skull, or fracture of the posterior wall of the glenoid cavity. I think Dr. Beck reports a case in which the patient died from abscess of the brain, due to a blow on the chin causing fracture of the base of the skull. I treat a great many of these cases in the hospital when the patient has received other injuries and has sometimes brain symptoms. I think the reason why the "knock-out blow" on the point of the chin is so famous is because the shock is so severe in a region that is close to the brain. The condyles are forced into the glenoid fossa, and being wedge-shaped, often cause a fracture into the cranium. With regard to surgical wiring, I have seen only one or two cases in over twelve hundred in which wiring had to be resorted to. Will Dr. Schamberg, who has had so much experience in the use of the Roentgen ray, say what angle is best from which to obtain a good roentgenogram of the condyle? In one case nineteen roentgenograms were taken of the fracture, and the one shown was the best we could get and the patient was put in every conceivable position to get that. In most of the other roentgenograms we had the vertebrae overlapping the condyle.

How does Dr. Blum keep the two ends of the bone in apposition and allow the patient movement of the jaw at the same time, in fractures posterior to the third molar? I believe that it is poor treatment to wire the upper and lower jaws together when any other appliance can be used that will permit the patient to use the jaw while being treated. I never do it unless the fracture is posterior to the third molar, or for some reason the teeth in the mouth cannot hold a splint to advantage. It is difficult often to keep the mouth clean when wired. Dr. Beck reports a case of inspiration pneumonia from a filthy mouth, wired for some weeks after a fracture, in which the mouth could not be kept clean, and in this case the patient died. I agree with Dr. Babcock that if we can possibly close the external wound, we should do so. Of course these wounds are mostly dirty or infected wounds and must often be drained. I think it is best to close these wounds partially, as soon as possible, but to leave one end open for a few days and allow it to drain and then later to fill in with granulations.

A PORTABLE POSITIVE-PRESSURE APPARATUS FOR ADMINISTRATION OF ETHER BY INTRATRACHEAL INSUFFLATION

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Major Medical Corps, U. S. Army
WASHINGTON, D. C.

On account of the advances in head, neck and chest surgery, made possible by the use of the Meltzer-Auer method of administration of ether by intratracheal insufflation, I decided, at the suggestion of Dr. William M. Sweet of the Department of Experimental Surgery, University of Pennsylvania, to construct an apparatus suited to the needs of service conditions. In order to meet these conditions, it was necessary that the apparatus should "work" at all times, should be made easily transportable, and non-destructible by age from storage or climatic conditions. As a few parts of this apparatus had to be made of glass, as far as possible standard articles only were used.

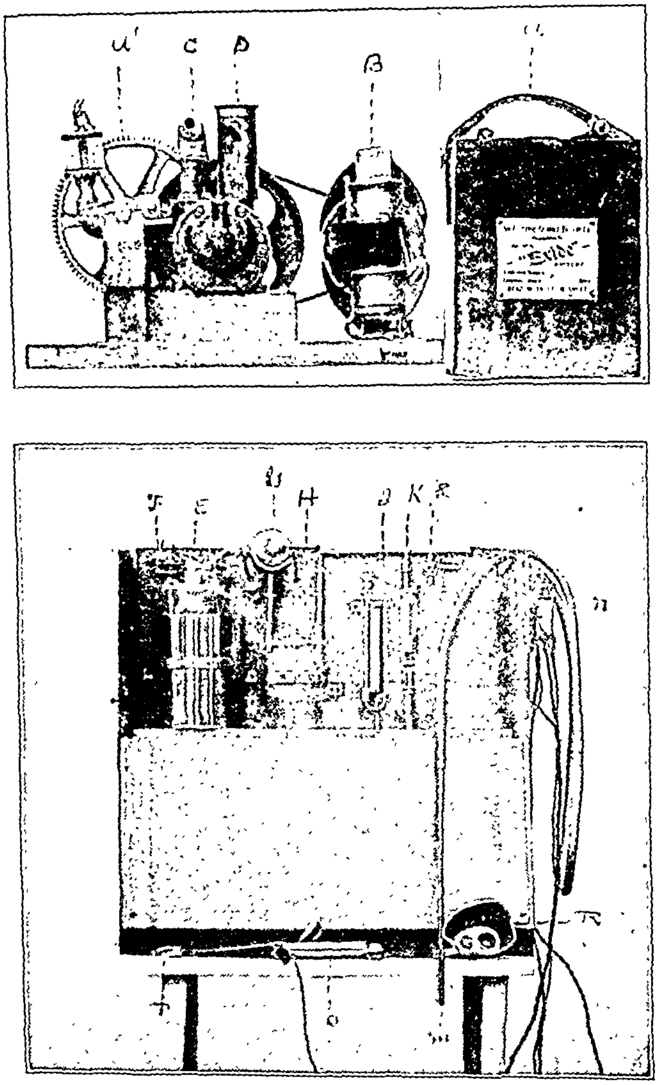
Through the courtesy of Dr. Sweet, Dr. Charles H. Frazier and Dr. George Müller of the University of Pennsylvania, this apparatus was tested on both animals and patients at the University Hospital, and was exhibited in 1912, at the annual meeting of the American Medical Association, at Atlantic City, and the Military Surgeons' Association at Baltimore.

Recently I have had the opportunity of giving it a thorough test under field-service conditions in the surgical work at Field Hospital 3, Texas City, Texas, and since May 30, 1914, at Vera Cruz, Mexico. During this time the apparatus was essential to the successful performance of four surgical operations: (1) A plastic operation on the chest-wall for tuberculous necrosis of ribs, with tuberculosis of pleura and lungs; (2) dissection of bronchial fistula of neck; (3) resection of frontal bone for frontal sinusitis; (4) tuberculous abscess of neck. In the two latter operations the anesthetic was administered with this apparatus, using pharyngeal instead of intratracheal insufflation. The anesthetic was administered by Capt. H. C. Michie, Jr., Medical Corps, U. S. Army. That Captain Michie refers to it as "the lazy man's way of giving an anesthetic" is an evidence of the ease with which he was able to administer it with this apparatus.

At Philadelphia, while testing this machine, a curious incident happened at the University Hospital. A physician with some experience in the use of the Meltzer-Auer method of producing positive pressure in the lungs by intratracheal insufflation anesthesia, expressed some doubt as to the mechanism of distending the lungs against the chest-wall by means of introducing air under pressure through a catheter which was only half the diameter of a man's trachea, asserting that an increase in incoming air would cause a corresponding increase in outgoing air between the catheter and the trachea, to the extent of preventing increased intrapulmonary pressure. To convince him and clear the question beyond possibility of any doubt, an animal was anesthetized by this method and both sides of the chest-wall were opened freely; with this apparatus, by increasing the pressure to 20 mm. as registered on the manometer, both lungs came well up and filled both openings. By further increasing the intrapulmonary pressure I was able to distend the lungs well out of the chest cavity.

With this apparatus operations can be done on the chest-wall without the hazard of a fatality from pneumothorax. The lungs may be operated on, provided hemorrhage is controlled by ligature or cautery, under practically the same degree of risk as in operating on the abdominal viscera. As remarked by Keen, "greater advances have been made in lung surgery in the last ten or twelve years, through the agency of the Meltzer-Auer method of maintaining positive-pressure and negative-pressure cabinets, than in all previous years in the history of surgery." The Meltzer-Auer method of maintaining positive pressure in the lungs has very largely superseded the use of negative-pressure cabinets on account of being simpler in its use, more satisfactory in its results, and far less expensive in cost of apparatus.

While stationed in Philadelphia in 1912, I had the opportunity of observing in Dr. Charles H. Frazier's clinic, at the University Hospital, the administration of this form of anesthesia in some forty odd cases, the apparatus used in Dr. Frazier's clinic being one devised by Dr. George P. Müller, Dr. Frazier's assistant. On one occasion when I gave the anesthetic for Dr. Frazier the patient was a man 55 years old who had a partial excision of the tongue done for carcinoma, with extensive dissection of the glands of the neck. He had been a heavy drinker, and his arteries were markedly sclerosed. At the end of an hour's anesthesia, Dr. Frazier remarked that his pulse was as good as it was at the commencement of the anesthetic.



Portable positive-pressure apparatus for ether administration; motor, blower and hand mechanism which fit in lower compartment, are one-third larger for illustrative purposes than apparatus in case. The entire apparatus contained in a box, weighs about fifty pounds and is the size of a suit-case.

Reference has been made by a few persons to the greater liability of ether-pneumonia from intratracheal insufflation. This has not been proved in over a thousand collected cases. I am inclined to believe that ether-pneumonia would be less by this method for the following reasons: 1. The catheter is sterile and is passed through a sterile Jackson bronchoscope introducer, no foreign material being introduced with catheter. 2. The return current of air bars the introduction of foreign matter after the anesthetic is commenced. 3. No chilling of tracheal or bronchial mucosa results from introduction of the etherized air, as after passing through the 3 feet of rubber tubing connecting the apparatus with the catheter, the air introduced has returned to room temperature.

It has been observed at Peck's clinic at Roosevelt Hospital, and my observations at Frazier's clinic at the University Hospital, Philadelphia, were, that nausea and vomiting were far less common after intratracheal insufflation anesthesia than after administration of ether in the usual way with a mask. This is accounted for by the fact that on discontinuing the anesthesia by intratracheal insufflation, it is the custom to blow out the lungs with fresh air, thus preventing the patient from swallowing ether-laden mucus when coming out from the anesthetic.

This apparatus while primarily designed for maintaining positive pressure in the lungs in conjunction with anesthesia, is of almost equal value in head, neck and spinal surgery, in that it removes the anesthetist from the field of operation, and can be administered with facility in any position of head and body.

Also, in the hands of a medical man, its service is equal to that of a pulmotor, air or oxygen being substituted for the etherized air. A valve or blow-off readily controlled by the operator admits of artificially distending and collapsing the lungs eighteen to twenty times to the minute. It has the advantage over the Sylvester and other forms of manual artificial respiration in that the machine does the work without wearying the operator. Thoroughness in the application of artificial respiration would not be sacrificed because the operator was exhausted.

The claims made for this apparatus is that it will work at all times. For convenience it is usually operated by an Exide storage battery; if for any reason the storage battery fails, by a readily adjusted gearing it is easily operated by hand mechanism. This hand mechanism is operated by grasping the handle located to the front and on the outside of the case in which the apparatus is contained, and by a slow and comparatively noiseless turning of crank connecting the gearing, the requisite pressure is obtained with little or no effort.

This I consider one of the most valuable improvements on this apparatus over that of other apparatus as suited to the needs of service conditions. The hand mechanism being substantially made of cast iron, no deterioration would result with storage or continued use in tropical climates. This cannot be said of the foot-bellows, which is made of leather and prior to this has been used as the substitute power for this kind of an apparatus. The apparatus is made by the Pierce Instrument Company, Philadelphia, and is described as follows:

"Power is derived from an Exide storage battery, *A*, is transmitted to *B*, an Edison motor (or power may be derived from hand mechanism *A'*. Air enters *C*, a positive pressure (hypress) blower, passes through *D*, an oil separator, by tubing to *E*, a standard three-necked Woulfe bottle, where air is filtered and moistened by gauze. This bottle sits in a copper tank and can be heated by hot water (this has, however, not been found necessary). A stop-cock is located at *F*, to allow escape of air not required for pressure.

"The air after being filtered passes out of distal neck of Woulfe bottle through a simple valve, *G*, where as much of the air current as is desired is made to pass over the ether in container, *H*. The amount of air passing over ether is indicated on index just over valve, *G*, which is easily regulated by hand. A mercurial manometer, *I*, indicates pressure of etherized air in lungs, and a mercurial blow-off, *K*, prevents excessive intrapulmonary pressure. To allow the lungs to partially deflate, the stop-cock, *L*, is opened and closed four or five times a minute. The etherized air passes out through 3 or 4 feet of rubber tubing to the tracheal tube, *M*.

"The Jackson laryngoscope, *O*, containing a small incandescent light is lighted by storage battery regulated by rheostat, *N*; *P* is a specially designed clamp for holding tracheal tube in position; *R* is an ether mask for use in etherizing patient before introducing the tracheal tube.

"The tracheal tube is introduced after the patient has been thoroughly anesthetized by the mask method. A No. 24 F. tracheal tube is the size of the catheter used. The tube is passed down the trachea a distance of from 26 to 30 cm. until the end of the tube comes into contact with bronchial tubes and their bifurcation, it is then withdrawn 1 or 2 cm., and the anesthesia by intratracheal insufflation is commenced."

The safety of this method of anesthesia is attested to by Dr. Samuel Robinson in a paper before the Massachusetts Medical Society, in which he makes an analysis of fourteen hundred cases of anesthesia by intratracheal insufflation with the statement that "intratracheal insufflation anesthesia is as safe a method of ether anesthesia as we have at our disposal regardless of the seat of operation."

Legal Record of Births.—The registration of a child's birth forms a legal record that is frequently useful and may be of the greatest importance. It establishes the date of birth and the child's parentage and legitimacy. It may be required to establish the child's age for attendance at public schools, for permission to work in states where children below a certain age are not allowed by law to be employed; to show whether a girl has reached the age of consent, whether individuals have attained the age when they may marry without the parent's permission; to establish age in connection with the granting of pensions, military and jury duty and voting. It may be necessary in connection with the bequeathing and inheritance of property or to furnish acceptable evidence of genealogy, and, in fact, may be important and useful in possible events too numerous to mention.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914.

RESECTION OF THE KNEE-JOINT FOR TUBERCULOSIS *

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Resection of the knee-joint is an old operation dating back to Filkin[1] of Northwick, who performed a successful resection in 1762. He was followed by Park[2] of Liverpool, in 1782; by Moreau[2] in France, in 1792, and Mulder[2] in Holland, in 1809. Buck's[3] operation in 1844 is given credit of being the first in America. In pre-Listerian days the operation was not in favor on account of the frightfully high operative mortality. The statistics of Heineke[4] (1866) reporting eleven cases with four successes and seven deaths emphasize this fact. Ollier's[5] statistics up to 1870 show a corresponding mortality, he having performed seventeen operations with but one recovery. After the introduction of antisepsis, Ollier's mortality dropped to 10 per cent. To-day, in properly selected cases, the operative mortality may be considered practically nil.

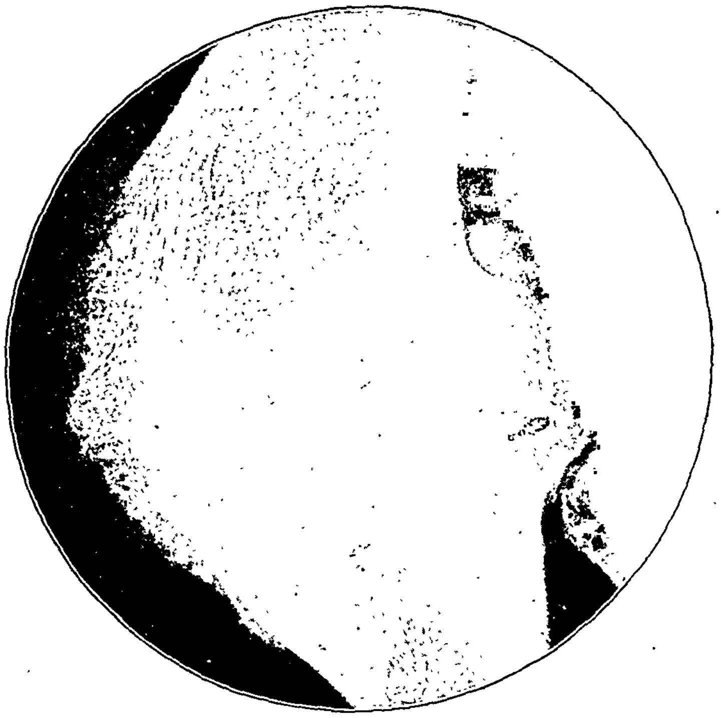

Fig. 1.—Bony ankylosis; result of acute infection. Note the tendency of the medullary cavity of the femur to become continuous with the medullary cavity of the tibia.

As a functionating knee rarely follows the treatment of tuberculosis of the knee in an adult, ankylosis with cessation of symptoms often is the best result to be hoped for. In an adult, however, tuberculosis *per se* rarely brings about an ankylosis. It may more readily occur after the formation of abscesses and discharging sinuses following secondary infection.

The history of cases in our clinic presenting a bony ankylosis of the joint (Fig. 1) is very different from those cases of the tuberculous type to be considered in this paper. The onset is sudden, coming on frequently as a result of exposure to the cold. Gonorrhea may be a cause. Tonsillitis or sore throat is often a premonitory symptom; chills and fever ensue, and the joint or joints become involved, causing swelling and pain so excruciating that opiates only partially control it. The patient is usually allowed to assume any posture that gives him greatest comfort. Symptoms usually subside in from six to twelve weeks. Ankylosis is apt to occur in the position in which the joint was held during the acute stage of the disease. The soreness gradually passes away, the general health returns to normal, but the patient is crippled by the mechanical inconvenience of the limb involved. This is the type of case which promises the best results in arthroplastic work.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Filkin: Jour. de méd., lxxxiv, 400; cited by Senn: Tuberculosis of Bones and Joints, 1892, p. 455.

[2] Tabulation by Price: A Description of the Diseased Conditions of the Knee-Joint, etc., London, 1865, p. 58.

[3] Buck: Tuberculosis of Bones and Joints, Senn, 1892, p. 456.

[4] Heineke: Beiträge zur Kenntniss und Behandlung der Krankheiten des Knies, Danzig, 1866, p. 240.

[5] Ollier: Sur la résection du genou, Bull. de l'Acad. de méd. de Paris, 1889, No. 20.

The type of tuberculous cases under discussion gives no such history and presents no bony ankylosis (Fig. 2). The onset is slight and trauma may or may not be a definite factor. Accurate statistics are difficult to obtain on this point. The history records remissions, but never entire freedom from some inconvenience. After years of gradually increasing difficulties, many patients request amputation. We have yet to see any joints of this type attain bony ankylosis by treatment under casts and braces, unless secondary infection has been a complication.

Undoubtedly, in some cases, tuberculosis of the knee-joint is cured by conservative treatment in the early stages. Definite information would be collected if aspiration were done in early cases and the guinea-pig test made. This test has proved to be a great aid in cystoscopic work and should be of the same value in the diagnosis of obscure lesions of the joints.

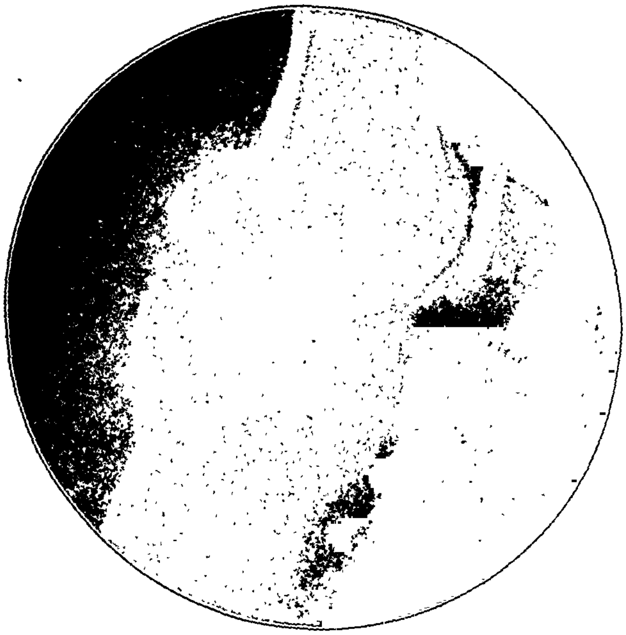

Fig. 2.—Tuberculosis of the knee of six years' duration in an adult. Destruction and disintegration of all constituents of the joint. No evidence of bony ankylosis.

The question arises, What shall be done with these cases? Conservative measures should be tried for a reasonable length of time, though in our experience with cases of tuberculosis of the knee-joint in adults resection is usually the final solution.

The selection of cases, or rather, their preparation for operation is important. The results are almost always good if the patient is operated on in the quiescent stage. Pain is much less and swelling and edema of tissues followed by sinuses is no postoperative complication if this r Extension and rest in bed are proba of quieting the condition.

Generally speaking, since the results are less fa- able in patients past 50 than in those between 20 and 40, it is even more important that the former be operated on during the quiescent condition. A disastrous result leading to amputation is very likely to prejudice the surgeon against a procedure which, if done under the proper conditions, gives excellent results.

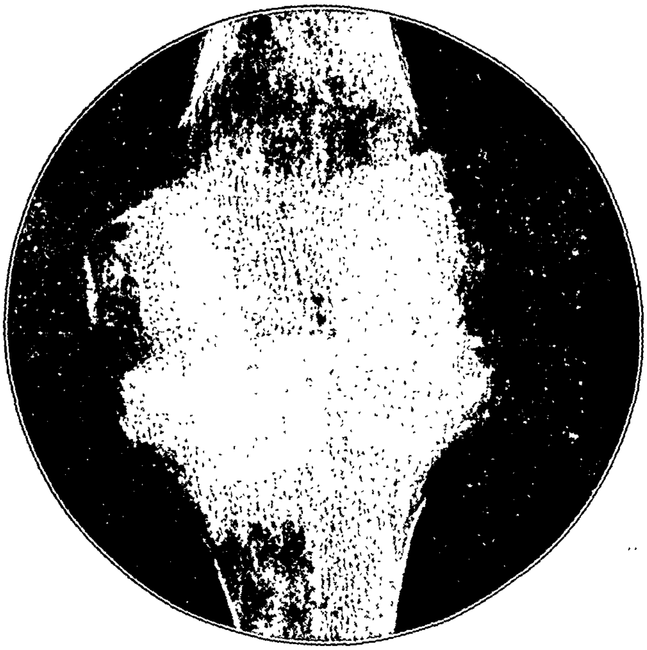

Fig. 3.—Radiograph of specimen. Ankylosed knee-joint three years after resection. Amputation because of pain and formation of abscesses.

This paper is based on a series of thirty-seven patients who were operated on before March, 1913, and whose histories have been subsequently traced. The records of the Mayo Clinic show sixty-six resections of the knee-joint before that date, but only thirty-seven could be traced. Up to May, 1914, seventy-eight resections had been done for tuberculosis of the knee with no operative mortality. Only cases have been selected which, by a review of the history, operative findings and pathologic report, were undoubtedly tuberculous. In some, the diagnosis before operation had been cleared up by the guinea-pig test. An attempt has been made to classify the symptoms, but such detailed report would be out of place here. The average age of patients in the sixty-six cases was 27 years; forty-three of these were males, twenty-three females. The average duration of symptoms before operation was eight years. These patients all came for consultation on account of varying degrees of pain, disability and deformity. Thirty-seven patients were traced, and of these thirty-two may be classed as cured since the functional results were good; two returned for amputation and three died. Of the three who died, full information could not be obtained. In one the cause of death (four and one-half years after operation) was given as tuberculosis, but without stating the site of the lesion. Two died of tuberculosis of the lungs; one, one and one-half years, and the other, three years after operation. Very encouraging and grateful letters were received from the patients who were cured, many of whom had gained from 40 to 60 pounds. Practically all were able to resume their full duties. Two stated that there was still some motion in the knee which caused inconvenience and feeling of insecurity, but that they were free from pain. Rather than resect again, two pieces of bone will be grafted to induce ankylosis and relieve these patients. Two patients of the thirty-seven have persisting sinuses. In one case the sinuses persisted even though there was firm bony ankylosis. This patient also had pulmonary tuberculosis. The abscesses which formed in the region of the knee, causing pain and loss of sleep, were opened and drained as they appeared. Vaccines, tuberculin, etc., were used to no avail. Three years after the resection, amputation was performed and the patient now gets about on an artificial limb; tubercle bacilli have disappeared from his sputum and the roentgenogram of the lungs shows marked fibrosis. A dissection of the removed joint shows firm bony ankylosis (Fig. 3). Each sinus led down to a superficial bony erosion, resembling the so-called tuberculous periostitis. Such sinuses may occur in patients operated on in an acute stage of the condition.

The time spent by the patient in absolute rest prior to operation is well repaid by the easy and shortened postoperative convalescence. In the acute stages with threatened rupture of abscesses, it is better to insist on rest and aspiration of the abscess, which, in a certain percentage of cases, will avert further formation of abscesses and sinuses. Three patients with sinuses were operated on: One of these, operated on in the acute stage in our clinic, had an amputation elsewhere three months later and died of cause unknown. In the two other patients operated on the sinuses healed within four months.

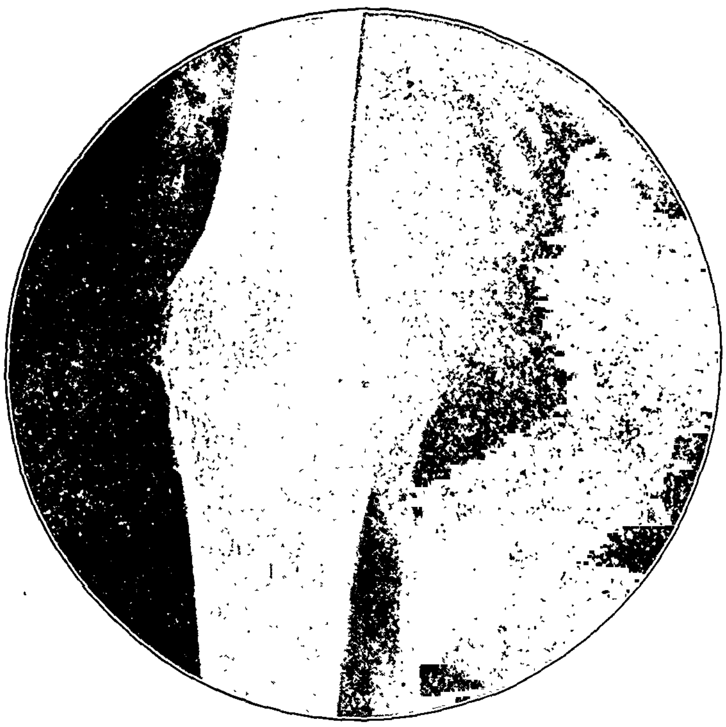
Fig. 4.—Bony ankylosis one year after resection.

The social status of the patient influences to a great extent the treatment. Obviously, a person of sedentary occupation can more readily put up with inconvenience of a brace or case than one engaged in active pursuits. The latter will be better off with a stiff knee which allows him to get about without pain than with braces and crutches.

The specimens were examined from a pathologic point of view to see if any definite data could be collected as to whether the primary focus was in the bone or the synovial membrane. This was impossible to determine owing to the advanced stage of the disease and the amount of bone destruction. All evidence of the early condition was destroyed, the picture showing only the terminal stage. Ely[6] has stated that the focus is more often primary in the synovial membrane. Stiles[7] has stated that in probably one-half of his cases in children the disease was primary in the synovial membrane. Certainly in our experience it would seem that the majority of cases are primary in the synovial membrane; but this opinion is based principally on clinical and radiographic studies.

All of the cases in this series were unilateral. Some patients had tuberculosis of the lungs when operated on. Definite figures are not possible, for, while many cases were classified as suspicious, only six were proved to be phthisis. One patient whose case was considered suspicious died, and two other deaths occurred three or four years later in patients whose lungs were clearly tuberculous at the time of operation. All were benefited by the operation. Two patients operated on are not in good health owing to kidney-lesions, but the condition of their knees is one of bony ankylosis, and the cases are classified among the successful cases. One patient with undoubted tuberculosis of the lungs has gained 35 pounds and reports himself in the best of health. We do not hesitate to do a resection of a tuberculous knee when it is one of two or three foci and seems to be the chief cause of the patient's poor general condition. Ordinarily, the patient's finances prevent indefinite treatment by rest and special apparatus. Our object must be to enable these people to get about without pain.

The types of operations suggested for tuberculosis of the knee-joint vary all the way from an erosion to a complete excision. In this study resection only is considered.

Ely in the last few years has made a point that the disease in the joint is there because the soil is favorable to the growth of the tubercle bacilli and that all that is necessary is to change the soil to starve out the bacilli. Therefore, he advises removal of only enough of the joint-surface to produce an ankylosis, doing this by aid of a chisel without disturbing the crucial ligaments or spreading wide the joint. The soft tissue may be ignored. The ankylosis changes the spongy bone to hard bone.

The Fergusson[8] type of operation is used in the Mayo Clinic and is essentially as follows: A tourniquet is applied 6 inches above the knee; an incision is made two-thirds the circumference of the knee following the line of the joint and running just below the patella, severing the lateral ligaments and the ligamentum patella, allowing quick exposure. The leg and foot are wrapped with sterile towels so that the knee may be acutely flexed on the thigh. The soft tissues are dissected back three-fourths of an inch from the head of the tibia and the femur. If the patella is fixed or seems involved, it is removed. An amputation saw with a blade from 3 inches to 4 inches wide is used to saw off the top of the tibia and femur, usually removing about ½ inch of the tibia and from ½ to ¾ inch of the femur. By a little care the saw may be introduced at such an angle as to insure the accurate fitting of the ends of the bone at the angle desired. If the patient's business requires much standing, about 10 degrees flexion is desirable, but for those who remain seated much of the time from 15 to 20 degrees flexion is a better position. The denuded surfaces are swabbed with iodin, the soft tissues sutured together with chromicized catgut and a rubber drain inserted. Such soft tissue is removed as may be superfluous in closing the wound. An extensive dissection for removal of all the soft tissue showing involvement is not necessary or desirable. Through a separate incision in the skin a wire nail is driven up through the head of the tibia into the femur. The nailhead is left projecting out through the skin, whence it is very easily removed in two or three weeks. It serves its main purpose while the dressing is being applied and in this differs from the use of metal plates as advocated recently by Osgood.[9] The tourniquet is removed and the skin is sutured with silkworm and horsehair, and the leg is then put up in a plaster-of-Paris case including the ankle and foot. At the same time a window is cut over the wound; within forty-eight hours the dressing is changed and the drain removed. Naturally there is some pain, which usually ceases within forty-eight hours, and, once fibrous union has started, the convalescence is free from pain. The case, together with the suture and nail, is removed in about two weeks and a new case applied which remains from six weeks to three or four months. When the ankylosis seems firm enough, a stiff-legged brace is used by day and a light posterior splint at night. Some of our patients have had sufficiently firm union to bear their weight in four months, but usually it takes about a year (Fig. 4).

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[6] Ely: Joint Tuberculosis, 1911, pp. 145, 154.

[7] Stiles: Brit. Med. Jour., Nov. 16, 1912, ii, p. 1356.

[8] Fergusson: Tuberculosis of Bones and Joints, Senn, 1892, p. 456.

A review of our work has led us to advise the operation in all cases of proved tuberculosis of the knee even if but slight destruction of bone has been revealed by the Roentgen ray. On opening up a joint in which the radiogram has shown but slight destruction of bone, one is often surprised to find complete destruction of the articular surfaces. In none of our cases of this type has there been bony ankylosis demonstrable on exposure of the joint at operation.

ABSTRACT OF DISCUSSION

Dr. Edgar D. Oppenheimer, New York: When there is marked flexion deformity and this is straightened, we may expect gangrene of the blood-vessels; but we had one case in which no such condition was present. The leg was practically straight before operation; and the day following, occlusion of the veins took place. I have seen no other case reported in which this occurred, when no straightening of the leg was done. I dissected the leg afterward and found the arteries patent; but the veins were occluded above the site of operation. There seemed to have been no accident, and I believe it was due to disease and inflammation about the vessels in the popliteal space. I would suggest that we make a longitudinal incision, instead of a cross incision; because the latter cuts off so many collateral veins.

Dr. W. C. Campbell, Memphis, Tenn.: I was a little surprised to hear Dr. Henderson state that he removed as much as three-quarters of an inch, I believe, from each surface. That seems a considerable amount and more than I have been in the habit of removing. I take off as little as possible. I just remove the cartilage and expose the bone, so that the surfaces will fit snugly. I have had no displacement, and have not had to use a nail or a plate in my work. The cast is applied with very little padding, and has been sufficient to give proper immobilization so that ankylosis was the result.

Dr. John Ridlon, Chicago: Did I understand Dr. Henderson to say that he and his associates in the Mayo clinic advise excision of all tuberculous knee-joints in adults and children? It seems to me that we should not go on record with such a recommendation. Men who treat tuberculous knee-joints by conservative methods, know that many knees are saved with perfectly good joints; whereas, excision or amputation would be done by many general surgeons. I have had the satisfaction of saving the knee in a case in which a good surgeon had excised one knee and wished to excise the other. The patient objected. The other knee, which was not excised is now straight in extension, has normal flexion, and has been for ten years a sound and healthy knee. At the meeting of the American Orthopedic Association in Philadelphia, Dr. Ryerson said that he wanted to see such a case. When he gets back to Chicago, I will send this woman to see him. It is by no means necessary, in my opinion, no matter how great the destruction, to excise the knee in order to cure the disease. As a time-saving measure in adults, it may be desirable; but for this reason, in children it is not. I saw a case in which an eminent orthopedist had made excision in childhood, and in adult life; there were 9 inches of shortening. I do not wish this Section to go on record as favoring excision in all cases of tuberculous knees.

Dr. R. A. Hibbs, New York: Is it not probable that the good accomplished by the resection of the knee for tuberculosis, is due to the elimination of motion produced by this operation, rather than to the removal of the tuberculous infection? The relief of symptoms occurs, as a rule, only in those cases in which motion is eliminated by a fusion taking place between the femur and the tibia. When this fusion does not take place, the activity of the disease usually continues. If such is the case, since it is impossible to remove all the infected material, it would seem to be wiser to make no attempt to remove it at all, confining the operative procedure to one which will best insure the desired fusion. As a means to this end, therefore, it has been my custom simply to remove the cartilage of the two bones and implant the denuded patella between them.

Dr. Fred. J. Gaenslen, Milwaukee, Wis.: I am glad that Dr. Hibbs brought up the question of the purpose of the operation. He, I think, agrees entirely with Dr. Ely that in all operations for the treatment of tuberculous conditions of joints, the elimination of motion is the essential thing. In all text-books on surgery, we read of the necessity of eradicating every possible trace of tuberculosis in a joint, when the operation is indicated at all. I have not had much experience in resections of tuberculous joints, and they are rarely called for with the efficient present-day conservative methods, but I have resected some knees and shoulders, and I was sure, at the end of these operations, that there was some tuberculous tissue that I had not touched, especially in the case of a shoulder, where it is hard to get at the synovial membrane around the glenoid cavity and to remove the granulation tissue in the cavity. Therefore I would say that the eradication of all tuberculous tissue in a tuberculous joint is next to impossible; and I have never seen any one else do a complete operation on any joint. In adults, tuberculosis of joints is often associated with pulmonary infection, in which case general anesthesia may be undesirable. In a recent case of knee-joint tuberculosis with pulmonary lesion, resection was done, using Bier's method of local anesthesia. The limb was first rendered bloodless by means of a rubber compression bandage from the toes to midthigh. The saphenous vein was exposed in the lower third of the thigh between two Esmarch bandages and 100 c.c. of 0.5 per cent. novocain solution were injected into the vein. Complete anesthesia resulted very promptly, so that the resection was absolutely painless. Just prior to closing, the Esmarch bandage was removed and as the last skin sutures were taken sensation was just returning. The method appears to deserve wider application.

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[9] Osgood: Boston Med. and Surg. Jour., July 24, 1913, p. 109.

Dr. Fred H. Albee, New York: The attempt to remove all tuberculous bone at the knee-joint is inadvisable, because it jeopardizes our chances for bony union. We should remove as little bone as possible, and thus get the largest possible surfaces of the tibia and femur together. I believe that the whole object should be to get bony union. I have never seen a knee-joint in which bony union had occurred, in which any tuberculous tissue remained for any length of time. The question is: Can we, in any way, aid in hastening this bony union? Dr. Hibbs has already mentioned his method of putting in the patella. I believe that every effort should be made to hasten bony union. I have carried out the following procedure in a few cases in which the patella was a little involved. I took off a small portion of the posterior part of the patella, and split the remaining portion into two strips. I then inlaid these inserts into each side of the tibia and femur, putting half in each bone. In the three cases in which I have done this, the bones united rapidly. In another case, I used a graft from the tibia with the same technic. Dr. Osgood, a year ago, in a case of excision, came to the conclusion that a Lane plate was advisable in order to get more rapid bony union; and I understand that the orthopedic surgeon at the Massachusetts General Hospital has been using the Lane plate since. I believe it is a good thing to put in bone instead of a Lane plate; and that the inlay is preferable in hastening ankylosis. Within a month I have seen a case of tuberculosis which had all subsided. I had done a circular cutting, taking off only cartilage from the tibia and femur and getting the broadest contact of bone. Nevertheless, the patient had two or three degrees of motion, and an unstable and sensitive joint. If I had put in inlays, I think he would have got union. In another case in which I did a resection a few years ago, the patient was later taken to another hospital and on account of delayed union amputation was done there. I believe there would have been a good chance for union in this case if time had been given for it; but there are a large number of cases of delayed union in which a secondary resection has to be done.

Dr. John Dunlop, Washington, D. C.: How soon after the diagnosis is made is this operation advisable?

Dr. H. W. Orr, Lincoln, Neb.: When a nail is not used, or, perhaps, when a nail is used, would it not be better to have the plaster put on up to the trunk, so as to get real immobilization?

Dr. Emil S. Geist, Minneapolis: One point that has not been brought out concerns the question of late deformity after this operation. Many of us have seen resected knees in which a good deal of deformity has taken place, usually in the direction of flexion. I have seen one case in which, following resection, there was a right-angle deformity, a genu recurvatum. The Germans believe that there is a tendency to deformity for a long time after such a knee has been resected even if bony ankylosis supervened shortly after resection, and I think that a mistake was made by many of us in not holding the knee in proper position long enough, either by means of braces or with plaster appliances. This is an important point.

Dr. Samuel F. Jones, Denver: Three distinct points should be strongly emphasized. In cases of tuberculosis of the knee-joint in adults, as Dr. Ridlon has well said, it is known that conservative treatment will enable a large number of patients to recover, if the proper immobilization is carried on through a sufficient period of time. Secondly, we should go on record as absolutely condemning the resection of any tuberculous joint in children. Thirdly, amputation should be advised and instigated as a life-saving measure only in cases of extensive tuberculous joint-disease.

Dr. Leonard W. Ely, San Francisco: I shall first refer to the point that Dr. Hibbs brought out, as to why, if we resect, we do not dissect out all tuberculous material. The reason for this rests on evidence that is not, I think, absolutely conclusive. It rests, first, on the statement made by many operators that if they resected these joints, they got the same results, whether they removed much tissue or very little, or whether they performed the operation devised by Flint, a very thorough operation, and removed 3 or 4 inches of the bone. No matter which one of these methods was pursued, the result was the same, namely, a cure, provided secondary infection was avoided. It rests, secondly, on the fact that there is no known way of removing all the tuberculous tissue. No one can be sure, when he closes a wound, no matter how he has operated, that he has absolutely removed all of the diseased tissue. It rests, thirdly, on an assumption of what takes place in the joint after resection, that is, in the tissues, in and about that joint. We do not know exactly what these changes are. No one has proved them. They have been said, on good authority, to be a disappearance of the essential tissues of the joint—a disappearance of the red bone-marrow, and a disappearance of the synovial membrane. I have never seen any absolute proof of this but I believe it is true from considerable evidence in my possession as well as from evidence submitted by others. Now Mr. Fraser tells us that it is absolutely erroneous, and that red marrow, instead of being a favorable soil for tuberculosis, is an absolute bar to its occurrence. I should say that the result is probably dependent on a complete deprivation of motion. We have assumed that it was due to bony ankylosis, but bony ankylosis certainly does not take place immediately. Therefore, we are driven to the theory that it is a fibrous condition of the marrow which takes place, producing a fibrous, and, eventually, a bony union; but here again, Mr. Fraser says that fibrous marrow is a favorable seat for tuberculosis. Again we are driven to the opinion that this operation of resection, if there is no secondary infection, does cause a complete disappearance of tuberculosis at that spot.

Dr. J. D. Griffith, Kansas City, Mo.: In 1871, 2 and 3, when I was an intern in Bellevue Hospital, New York, in the cases there in which amputation was performed, death as a rule occurred. We always tried to get "laudable pus;" if we did not, we wondered why. We pulled our silk ligature out of our buttonholes. We did not know that these cases were tuberculosis at that time; but Dr. Ridlon and one or two others may remember, that the patients that were cured in Bellevue Hospital were the ones that came in with old sinuses, whose history ran over a series of years. Dr. J. R. Wood used to excise these joints right along, and these were the big operative cases with recovery. The patients recovered in the same percentage as they do now. There was plenty of laudable pus coming from the joints. We put them up in plaster of Paris spicas with big openings on the side. We kept the wounds well dressed and fed the patients up; and the results of the excisions did not vary very much in these cases from those in similar cases now. This is a matter of history.

Dr. Albert H. Freiberg, Cincinnati: It seems to me that we are liable to render ourselves guilty of too easy and too wide-spread a generalization on the subject of the removal of infected tissue in tuberculosis of the joints. It does not complicate the operation greatly to remove all the tissue that is obviously infected, and I do not see any great objection to doing so. On the other hand, there is not the best of clinical evidence that an ankylosis is required in order to obtain complete cure; and that it is a matter of comparatively little importance whether or not tuberculous tissue remains behind. I am sure that members of this Section can recollect cases of excision of the knee for tuberculosis in which non-union resulted and in which there was no recurrence of tuberculous disease. I have had such cases in my own experience, although not for some years. We need to go back to the pathology of tuberculosis and nature's methods of curing the disease in order to find out what we had best do. If we leave material obviously affected with tuberculosis, in the joint at the site of operation, it must become encapsulated by means of fibrous material and rendered innocuous in that way, be carried off by means of the circulation or the lymphatics, or else come to the surface by means of a continuous breaking down of tissue. The more infected material we take away, the less there is to be disposed of by the tissues in one of these three methods. While an encapsulated tuberculous mass may be harmless to the end, it nevertheless, remains a potential source of harm. Dr. Henderson gave an instance in which tuberculous material, which at first gave no trouble, finally broke down and caused a sinus in a knee which was ankylotic. In this case, although ankylosis resulted, the sinus persisted and led to final amputation of the limb. I do not mean that by removing all infected material we always dispose of this danger, but we may do so sometimes. However much we may feel, on theoretic grounds, that the material will be taken care of, there is the danger that sometimes it will not; and therefore it had better be removed.

Dr. M. S. Henderson, Rochester, Minn.: As regards gangrene, I must say that I have never seen it, but would merely suggest that if a tourniquet was used for any length of time it might have been the cause. Dr. Campbell speaks of saving as much bone as possible to prevent shortening. My experience is that a patient with a stiff knee gets about better with from an inch to an inch and a half of shortening than if the leg is the same length as the normal one. Dr. Ridlon advises against resection of tuberculous knees in children and with this I am entirely in accord. In my paper I am talking only of tuberculosis in adults showing bony destruction. Dr. Hibbs made the point that the elimination of motion is probably the cause of the eradication of the disease and should be thought the factor rather than the extensive removal of bone. This is true to a certain degree, but I feel that bony ankylosis should be obtained. Tuberculosis is seen in the shaft but very rarely, whereas it occurs more often in the metaphysis and epiphysis. By attaining bony ankylosis we change the soft bone to hard bone and the disease is cured. I might mention a patient whom I saw, a woman who had had a resection for tuberculosis 25 years ago in Germany. We took a roentgenogram and found the medullary cavity of the femur to be directly continuous with the medullary cavity of the tibia and that we had practically one bone instead of two. I have not used the patella in this class of cases, as suggested by Dr. Hibbs. It is a splendid means of obtaining an ankylosis when it is wanted in infantile paralysis cases, but in a tuberculous knee-joint would not cause what seems to me important—a bony ankylosis, nor would it assist nature by removing the bulk of the tuberculous disease. In the resection of a knee-joint for tuberculosis, we save the patella, whenever possible, for, if it is healthy, its removal will result in considerable trauma and cause healthy tissue to be opened. If the patella is diseased, it cannot be used and, if bone is removed from the tibia and femur, the patella is not necessary in the ankylosis. I have not used local anesthesia in resections, but think that it would be a help in certain cases. We use a light ether anesthesia in patients having tuberculosis of the lungs and have not had any bad results. Dr. Albee mentioned the use of the Lane plate by Osgood. All our patients here reported were operated on previous to March, 1913, before Osgood's results were published. It is true that union is sometimes slow. Experimental work has shown that eighty-three days is the earliest time in which bony union could be demonstrated in closed fractures in animals and it usually took from one hundred and fifty to one hundred and seventy-five days.

A Museum of Fatigue-Eliminating Devices.—In Providence, R. I., a museum of devices for the elimination of unnecessary fatigue has been started (Gilbreth, F. B.: *Scient. Am.*, Nov. 14, 1914). It emphasizes the paucity of such devices for, in spite of the fact that tens of thousands of letters requesting cooperation were sent out and replies indicating willingness to cooperate were received, the museum contains at present only six simple devices, chiefly various types of chairs. One device permits work which has always been done standing to be done sitting. Another device permits the worker to stand part of the time at work which usually had been done sitting. Another type eliminates vibrations from the floor. This is said to have been very successful.—*Scientific American.*

THE BACTERIOLOGIC EXAMINATION OF THE URINE IN A CASE OF ECLAMPSIA *

G. F. DICK, M.D.
AND
G. R. DICK, M.D.
CHICAGO

Recently we[1] published the results of the bacteriologic examination of the urine in parenchymatous nephritis. The frequency of renal lesions in eclampsia suggested the bacteriologic examination of the urine in this trouble.

According to Williams[2] the infectious theory of eclampsia was advanced as early as 1885, and various bacteria have been cultivated from the urine and also from the tissues and juices of the body. Other investigators, however, failed to confirm these findings and Williams states that his own investigations have given negative results. It seemed desirable, however, to examine the urine of eclampsia by the newer cultural methods, which had yielded positive results in nephritis.

The patient from whom the urine was obtained was a woman 30 years old who was admitted to the obstetric ward of Cook County Hospital during the night of September 15, 1914. The patient was in convulsions when admitted, and a forceps delivery was made during the night. When seen at 10 a. m. the following day she was still in coma and showed marked edema of the face and extremities. Since admission she had voided 3 ounces of urine. She died about twenty hours after delivery. With aseptic precautions a specimen of urine was obtained by catheter. It measured 15 c.c., was turbid and smoky and contained a large amount of albumin, with numerous coarsely-granular casts, many red blood cells, some polymorphonuclears, spherical pear-shaped and tailed epithelial cells.

Aerobic cultures on blood-ascites-agar showed no growth. Anaerobic cultures on the same medium and dextrose-agar shake cultures showed many slowly-growing colonies which were visible on the third day. They consisted of gram-negative bacilli about the size of influenza organisms. They grew anaerobically only, forming pin-point, transparent colonies on blood-agar without affecting the blood. In twenty-four hour cultures they were sluggishly motile. Satisfactory growths on the ordinary mediums were not obtained.

The intravenous injection of the organisms from ten blood-agar slants produced no apparent result in a small dog.

In one of the agar shake cultures there developed a single colony of gram-positive short chained streptococci which did not grow in transfer.

Similar cultures of catheterized specimens of urine from normal puerperal women gave in one case entirely negative results; in a second case a few colonies of staphylococcus.

Little can be said concerning the significance of the organisms described. We have, however, found in a number of nephritic urines organisms resembling those cultivated from the urine of the case of eclampsia and it seems to us that the results described indicate that the infectious theory of eclampsia is still worthy of consideration.

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* From the Memorial Institute for Infectious Diseases, Chicago, Ill.

[1] Dick, G. F. and G. R.: The Journal A. M. A., Nov. 7, 1914, p. 1661.

[2] Williams: Text-Book of Obstetrics, New York, 1904.

REPORT OF A CASE OF ACUTE DILATATION OF THE STOMACH

ANTONIO MAYORAL, Jr., M.D.
PONCE, P. R.

In a case of double pyosalpinx the patient suffered an acute dilatation of the stomach during the operation, so that it could be seen and examined. The case is of special interest, first, because it cannot be explained by the most common theory of the cause of this condition, that is, constriction at the lower end of the duodenum between the root of the mesentery and the vertebral column by the dragging down of the small intestine; second, because it occurred in the midst of the operation and not as a postoperative complication, and third, because the patient completely recovered with only slight discomfort in the epigastrium for the next twenty-four hours.

History.—P. C., a mulatto girl aged 21, not married, with no tuberculosis or cancer in the family, with syphilitic marks on the arms, upper abdomen and legs, came to me because of profuse bleeding at menstrual periods, a white discharge and pain in the left iliac fossa. Vaginal examination revealed a creamy discharge from the cervix of six or eight months' duration. The cervix was eroded. The uterus was not very movable. A tender mass the size of a hen's egg could be easily felt on the left side.

Operation.—Under ether anesthesia, dilatation and curettage were done. The patient was placed in the Trendelenburg position, the abdomen painted with 7 per cent. tincture of iodin and washed with alcohol, and a 3-inch incision made in the median line, between the umbilicus and the symphysis pubis. The peritoneum was opened between forceps. Extensive pelvic inflammation was found; both tubes were attached by fresh adhesions to the surrounding structures. Without much trouble the right tube was freed and amputated by clamp and ligatures of No. 2 catgut. The left tube was somewhat more adherent, but it was finally freed, and after having ligated the tube as it leaves the uterus and the free edge of the broad ligament just under the tube, and as I was about to place my clamp to amputate it, the patient began to act queerly, the respiration quickened, the pulse became rapid and thready, and the intestines came out of the wound and were held back with difficulty. I continued the operation as well as I could, and in placing my hand into the wound was surprised to find the stomach at the upper edge of my incision and a second later about three fingers breadth from the symphysis pubis. The stomach tube was ordered passed and a good quantity of gas was let out; the stomach gradually returned to its normal size, but no. liquid was obtained. Anesthesia was then stopped and the operation was rapidly finished, continuous catgut sutures being used for closing. The table was lowered to the horizontal position, and the patient dressed and sent to the ward. Recovery was uneventful.

The patient was anesthetized by our special anesthetist, a nurse of large experience. The case from the beginning was hard to manage and so rigid that I had to call for deeper anesthesia continuously, the patient not becoming fully relaxed until shortly before she developed the dilatation of the stomach.

The causes of acute dilatation of the stomach are given as: First, constriction of the lower end of the duodenum between the root of the mesentery and the vertebral column by dragging down of the small intestine (Albrecht). It is obvious that in this case such a constriction could not have occurred, as the patient was in the Trendelenburg position when she developed the dilatation, and the intestines were thrown toward the diaphragm. Second, excessive secretion and paralysis from overdistention (Fagge). In this case, nothing but gas was let out of the stomach, there was no excessive secretion. Third, infarction, peritonitis, dilatation as a part of general involvement of the intestines (P. Muller). But there was no general peritonitis in this case. What then was the cause of the dilatation? I believe that in this case at least we must look for the cause, first, in a paralysis of the stomach center in the brain due to the anesthesia that had to be pushed to its limit, as the patient could not be relaxed otherwise; and second, to the rapid development of gases within the organ, a thing favored by the paralysis of its wall.

QUININ SALTS IN POSTOPERATIVE CASES

PRELIMINARY REPORT

EDMOND BONNOT, A.M., M.S., M.D.
ST. LOUIS

The method originated with me accidently in May, 1914. After operating for acute appendicitis on two malarial patients I instructed the nurse to give the patients 10 grains of quinin muriate by rectum every six hours until such time as the patient could take quinin by mouth. To my surprise these patients had no nausea, vomiting, gas pains, backache or postoperative thirst. The result was so marked that I have used it in all laparotomies since, with the following results in twenty cases including the various abdominal operations:

No nausea or vomiting in 10 cases.
Slight nausea and vomiting in 6 cases.
Much nausea and vomiting in 4 cases.
No gas pain in 19 cases.
Slight gas pain in 1 case.
No backache in 20 cases.
No desire for water within the first twelve hours in 9 cases.
Only moderate thirst in 11 cases.

In all cases the postoperative thirst was much retarded.

Dr. Willis Young of St. Louis has since used this method in all his laparotomies with corresponding results.

The Sisters at St. Anthony's Hospital have been so impressed with this method that they have used it as a routine postoperative procedure in more than one hundred cases with only one case in which there seemed to be no benefit.

The technic is simple: Quinin muriate, 10 grains, dissolved in 2 ounces of water at 100 F. is given by rectum immediately after operation, followed by saline proctoclysis or (in septic cases) by 6 ounces of olive oil. The quinin is repeated every six hours for four doses. If after the quinin is stopped the patient shows any signs of gas pains or backache, another dose will give immediate relief.

I use the muriate of quinin because of its solubility; but any salt of quinin will answer. Dr. Willis Young reports that he has used the sulphate in suspension with equally good results.

So far I have not had any idiosyncrasy to quinin in this method or noticed any bad effect. In two cases of pregnant women who were operated on for acute appendicitis I did not use the quinin, and both suffered much with gas pain. Whether or not quinin would have been contra-indicated in these cases I do not know.

In all cases recorded, ether was used as the anesthetic. I do not attempt to explain the action of quinin in this relation except from its analgesic effect and the prevention of the temporary postanesthetic paralysis of the intestines.

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Special Article

PRACTICAL PHARMACOLOGY *

INTRODUCTORY

Under the title given above it is proposed to publish a series of articles in which there will be discussed the materia medica, pharmacology[1] and chief therapeutic uses of those drugs which have been accepted by the Council on Pharmacy and Chemistry for inclusion in the "Handbook of Useful Drugs."[2] Convenient forms for prescribing them will be suggested and the advantages of depending on standard drugs rather than on commercially exploited nostrums will be demonstrated.

Several years ago THE JOURNAL published a somewhat similar series of articles under the title "The Pharmacopeia and the Physician," and while the same general plan will be followed in the present series, the discussions will be limited almost entirely to the really essential drugs of the materia medica, as indicated in the title of the articles.

It is evident that the therapeutic use of drugs requires some knowledge of their pharmacologic actions, but many physicians fail to appreciate the true value of pharmacology. Frequently, too, it is impossible to distinguish the literature of the disinterested investigator from that issued by those who are commercially interested in the products which they discuss. It is hoped that in these articles we may be able to present the essentials of the pharmacology and therapeutics of the important drugs so that they may be useful to the general practitioner who has not the time and the hospital facilities for clinical research.

We trust that this treatment of the subject, so far from satisfying the reader, may stimulate him to further inquiry and the use of the larger works on pharmacology and therapeutics.

The pharmacology of the different drugs will be discussed very briefly in some cases, somewhat more comprehensively in others, but sufficiently in each case to afford a basis for the best therapeutic use of the drug under consideration. The discussion of quinin and digitalis, respectively, illustrates the principle followed. Quinin finds its greatest use in the treatment of malaria, in which its value depends on its killing the organisms which are found in the blood, and the secret of the successful employment of quinin is to get the requisite amount in the blood at the proper time; hence dosage and methods of administration are of greater importance in that case than a knowledge of the various other pharmacologic actions of quinin, beyond the mere fact that it is a general protoplasm poison, which is consequently injurious to all tissues with which it comes in contact in sufficient concentration. Digitalis, on the other hand, does more harm than good in the hands of those who use it without a pretty accurate knowledge of its pharmacologic actions; it becomes necessary, therefore, to devote more attention to the pharmacology of digitalis than to that of quinin.

Drugs produce their effects by increasing or decreasing the normal functions of the structures on which they act, and in so doing they do not themselves produce an appreciable amount of energy. The failure of a drug to produce its expected therapeutic effects may often be explained by the condition of the organ on which it acts. A grasp of this relationship between drugs and the organism will serve to simplify the understanding of their uses and limitations, and will prevent frequent disappointment.

Every drug exerts a variety of actions, but only a few of the actions of any drug are of benefit in any given condition; the others are negligible or detrimental. Thus, in the treatment of night sweats, atropin is used on account of only one of its many actions, namely, its power of limiting secretion.

The therapeutic usefulness of a drug depends on the fact that it exerts a far greater action on certain organs or tissues than on others. Strychnin, for example, is capable of combining with certain cells in the central nervous system and affecting them profoundly, while leaving the other cells of the body practically unaffected.

The influences of age, sex, weight, diet and many other factors which modify the actions of drugs are generally recognized and do not call for detailed discussion here, but every physician encounters occasional disappointment in the use of a drug on which he has come to rely, and we shall point out some of the most common causes of the variability of action, which are frequently overlooked because they are deemed of too little importance to merit careful consideration.

ABSORPTION AND ELIMINATION

The intensity of the action of a given drug usually depends largely on the total amount which acts at one time. Hence, the action of those which are absorbed into the circulation depends on the amount in the blood at one time, which is determined to some extent by the ratio between the rate of absorption on the one hand and that of elimination or destruction in the body on the other. A large dose of a drug may produce less effect at one time than a small dose administered in the same way at another time, the difference in the intensity of action being due to differences in the rates of absorption and elimination. The intensity of action may be influenced in other ways.

The degree of dilution in which a salt is administered not only influences the intensity of a given action, but may even determine its nature. A concentrated solution of magnesium sulphate may cause nausea, whereas the same amount of the salt in dilute solution will cause purgation. Magnesium sulphate usually causes only watery diarrhea when it is administered properly, but it has been known to cause death when administered in the usual way, because of its rapid absorption and slow elimination.

A common cause of disappointment is the want of exact knowledge concerning the absorption of drugs. It is often asserted, and accepted without question, that because a given substance is very soluble in water, it must necessarily be absorbed readily from the alimentary canal. Disregarding the relatively slow absorption of soluble purgative salts, we may call attention to the fact that for some unknown reason,

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* This is the first of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

[1] The terms "materia medica" and "pharmacology" are often somewhat loosely used. Materia medica treats of the physical and chemical properties of drugs and of their pharmaceutical preparations. Pharmacology, or pharmacodynamics, treats of the actions which drugs exert on normal animal tissues or organs. For example, the paralysis of vagus endings in the heart by atropin is one of its pharmacologic actions.

[2] The Council has made a careful selection of all drugs and preparations, irrespective of their nature, whether official or unofficial, proprietary or non-proprietary, which seem to be the best for the treatment of diseases, and these have been included in the little volume entitled, "A Handbook of Useful Drugs."

some of the *very* soluble glucosids are absorbed slowly and irregularly from the gastro-intestinal tract; also that certain glucosids or resins which are wholly insoluble in water are absorbed fairly rapidly from the gastro-intestinal tract. In other words, we must recognize the fact that every drug is a law unto itself in regard to its rates of absorption and elimination.

Most drugs are not absorbed readily from the stomach, but must pass into the duodenum before absorption begins; it may follow, therefore, that when the gastric movements are interfered with by disease or drugs, and especially when the pylorus remains in tonic contraction, as it does at times after large doses of morphin have been taken, drugs may remain unabsorbed in the stomach for hours after oral administration. Drugs should be administered subcutaneously or by the rectum when it is suspected that the gastric contents will be prevented from passing into the duodenum in the usual manner.

Comparatively few drugs are absorbed from the unbroken skin, and the use of ointments and plasters containing active alkaloids is irrational in the main; the good results which may follow their use in most instances are not due to the alkaloids. For example, in the case of opium and lead wash — a most unscientific mixture, since the morphin in that case is valueless — the beneficial results are due to the astringent action of the lead wash. A few substances which are readily miscible with oils and fats penetrate the skin sufficiently to act on the sensory nerve-endings, but our knowledge of this subject is far from complete.

Another cause of disappointment lies in the fact that physicians sometimes forget that locally acting drugs may fail to exert an effect after absorption similar to that observed in the alimentary canal. Tannin, for example, acts as an astringent on the mucous membrane of the gastro-intestinal tract after its oral administration, but it is not absorbed in the free state and does not exert such an action on other parts of the body. Antiseptics are still sometimes recommended for their action on micro-organisms in the circulating blood, but such misleading advice occurs chiefly in "interested" literature.

We are not so well informed as we should be even on the subject of dosage; it is often stated as a rule that the oral dose of a given drug is about twice as large as the subcutaneous dose, and that the rectal is about twice the oral. These ratios apply to very few drugs indeed; the attempt to regulate the dosage of some drugs by this rule would result disastrously. In fact, death has resulted from the subcutaneous injection of an amount of strophanthin equal to one-half of the oral dose. This illustrates the necessity for a better acquaintance with a few drugs, rather than a superficial knowledge of a large number. At best drugs are like two-edged swords capable of doing harm if used improperly, and if we assume the responsibility of using them we owe it to our patients to know as much as possible about their actions.

SYNERGISTIC ACTIONS

It was formerly customary to use mixtures of many drugs having supposedly related actions without any clear idea of their synergistic effects, but such mixtures are not used at present by educated physicians, for we are coming to have a better understanding of the synergistic actions of drugs which are useful in some cases and harmful in others. Some of these synergistic actions will be discussed when we consider the drugs exhibiting them.

MODES OF ADMINISTRATION

Unless the oral method is contra-indicated, drugs should be administered by the mouth. While the other methods advocated from time to time may be suitable for special cases, and in the hands of those who have developed a special technic, the oral administration will suffice in the vast majority of cases.

The intravenous injection of a variety of drugs has been advised, but this method is distinctly dangerous in the hands of any one who is not skilled in its use, and it is often disappointing even with the best technic.

Compressed tablets of insoluble drugs do not always disintegrate rapidly in the stomach, and such drugs are preferably given in the form of mixtures or as dry powders, which may be enclosed in capsules. Many of the ready-made pills tend to become harder and less readily disintegrated when long kept. Freely soluble salts, such as potassium bromid, taken in doses of 0.3 gm. (5 grains) or more, may give rise to gastric irritation with nausea, when they are administered in concentrated solution, or in the form of compressed tablets, which form concentrated solutions on dissolving in the stomach. Such salts should be dissolved and mixed with from ten to thirty times their weight of fluid before being administered.

Nausea and vomiting sometimes follow the administration of various drugs. When this symptom arises from local irritation of the stomach it may be avoided either by dilution or by a different mode of administration. In other cases, as in members of the digitalis group, the nausea and vomiting, being due to a stimulation of the vomiting center in the medulla, are not influenced by the mode of administration. In such cases, nausea is to be avoided only by regulation of the dose. Before resorting to inconvenient methods of administration, therefore, one should be certain that the method proposed will actually give relief from the disagreeable symptom.

Idiosyncrasy, tolerance and cumulation, so called, will be discussed in connection with those drugs in the use of which they are important factors.

MULTIPLICATION OF PREPARATIONS

The present era of pharmacy and therapeutics is marked by the multiplicity of alleged remedies urged on the attention of the prescriber. This multiplication of preparations is attributable largely to the influence of commercial interests, which have often had more weight than considerations of pharmacologic and medical science and have overshadowed the interests of the sick.

In this confusion physicians will often find themselves at a loss how to choose wisely the most efficient agent. A careful study of the new remedies offered will show that few present any new therapeutic action or are specifics for particular diseases. Most of those which are worthy of consideration claim advantage over the older remedies in the avoidance of disagreeable side effects. In a considerable number of cases these claims have not been realized and the remedies are needless encumbrances to our materia medica. Before accepting a manufacturer's claim that his preparation is preferable because it avoids undesirable by-effects, one should make sure that this freedom from disagreeable effects is not accompanied by lack of therapeutic efficiency.

In choosing remedies the practitioner will gladly welcome the help extended by the Council on Pharmacy and Chemistry in sifting the mass of evidence and selecting for regular use the remedies listed in the new volume, "Useful Drugs." In admitting preparations to the book New and Nonofficial Remedies, the Council has adopted a liberal policy; it has admitted any drug which has probable value if exploited in an unobjectionable manner. Though the Council has been in existence for nearly ten years and though during that time manufacturers have been afforded ample opportunities for submitting evidence of any advantages which their preparations possess, among the thousands of these advertised to physicians, not more than 340 are enumerated in New and Nonofficial Remedies, and of this number not more than a score have been found of sufficient importance to merit inclusion in the "Handbook of Useful Drugs," for admission to which evidence of merit is essential.

It is obviously impossible in these articles to discuss any considerable number of the popular nostrums. A few of them, however, will be mentioned, chiefly to show the methods of misrepresentation employed, and the necessity of fostering the use of standard drugs of proved value and well-known side actions for which proper allowance may be made in the administration.

These side actions deserve more attention than they usually receive. We have been prone to consider unfavorable symptoms in patients as unavoidable manifestations of the diseases from which they suffer in many cases in which the drugs were contributing causes at least. We must face the question squarely and recognize the fact that there is no such thing as an ideal drug. When a manufacturer asserts that his preparation possesses all the advantages of a given drug with none of its disadvantages, his excessive optimism is obvious.

CLASSIFICATIONS OF DRUGS

Buchheim classified drugs about sixty years ago according to their more prominent pharmacologic actions, and this classification has been retained with some modifications to the present time, despite the fact that it has many disadvantages. No strict classification is possible, because every drug has a variety of actions, and no two have exactly the same range of activities.

We shall make no effort to group the drugs in any rigid way in the following series of articles, and it is understood that any grouping attempted is merely suggestive and intended to facilitate the convenient discussion of the various drugs. The following examples will serve to illustrate the disadvantages of attempting a too rigid adherence to any classification: The convulsions produced in frogs by strychnin, morphin, thebain and some other drugs are identical in character; yet in view of their clinical use, it would not be desirable to place strychnin and morphin in the same class; atropin and morphin are antagonistic in small doses and synergistic in large. The local anesthetics, the general anesthetics and some other groups, on the other hand, present no such difficulties of classification.

(*To be continued*)

Preventogram.—It is better to isolate a suspicious case, that does not develop a communicable disease, than to expose many persons while the nature of the illness is in doubt.—Pittsburgh *City's Health.*

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 55*)

XV

Treatment

The preventive measures have already been referred to and described. They consist of proper bathing to keep the skin in good condition; proper clothing, depending on the region, season and exposure; proper heating and ventilation of living rooms, bedrooms and buildings in which persons are employed, and in the case of the child, proper heating and ventilation of the schoolrooms. As previously stated, a child may be overclothed for play, as well as underclothed for sitting in cool rooms. The child should be extra well clothed, if he attends an open-air or open-window school during the cold seasons; such schools probably are among the greatest means of prevention of coryza, sore throats and coughs. On the other hand, the too severe exposure of young children and babies to dampness and winds is inexcusable and does not increase their resistance against catching cold, and often precipitates more serious conditions. Any person who has a tendency to nasal or pharyngeal colds should not suffer undue exposure at night. Too many windows being open may cause too much direct draft over the face. Fresh-air sleeping should be governed by common sense. Cold daily sponging of the child's face, neck and chest, followed by quick friction, is a splendid means of decreasing the likelihood of catching cold or becoming chilled. Older persons may take cold showers or cold plunges in the morning, if it is advisable in individual cases.

To repeat, it is urged that while most acute colds, if not all, are probably due to germs, still acute congestion and more or less nasal secretion may be caused by drafts or currents of cold air causing chilling of some uncovered surface of the body, especially if the person is overheated or is perspiring from exertion or from being in an overheated room. This congestion forms a splendid culture ground for the development of germs.

Children especially should not be subjected to unnecessary infection by being taken into crowded cars, stores or into various assemblages, where it is impracticable to avoid close contact with coughing or sneezing persons who do not properly protect the surrounding atmosphere by using handkerchiefs.

Schoolchildren with acute colds should either be sent home or should be taught to prevent spraying the atmosphere with droplets of infection and thus infecting surrounding children. If a case of acute coryza occurs in a family, the family should understand that it is contagious, and the sick should be isolated from the well as effectively as practicable.

As so many times urged, a child or adult who has repeated colds should be examined and properly treated medically or surgically by a nose and throat specialist. The family should also be taught that the exchange of handkerchiefs and the use of the same towels when one member of the family has a cold or sore throat is inexcusable. Direct contagion by this method is probably very frequent. During all colds the nasal and throat secretions or excretions should be received into paper handkerchiefs, or pieces of cheese-cloth, and either immediately burned or deposited in a paper bag for burning later. If handkerchiefs are used, they should be washed separately and soon.

The harm which a too dry indoor atmosphere can do to mucous membranes of the upper air passages is well described by Wolff Freudenthal.[2] The drying of these mucous membranes caused by evaporation due to the inhaling of too dry air leaves the membranes unprotected, and the first irritant that attacks them may cause an inflammation. It is necessary, therefore, to teach and advise that more moisture be furnished the air of all houses, buildings, schoolrooms, churches, theaters and other places of assemblage.

By all of these methods the frequency and number of nasal colds will be greatly diminished.

Acute coryza having begun, an attempt should be made to abort it. There are various methods of relieving internal congestions, and the general principles are the same in all cases, wherever the localized inflammation may be. These general methods are some means to reduce an increased temperature, some means of bringing the blood to the surface of the body and increase perspiration, some means to produce free catharsis and thus to deplete the blood-vessels and lower the blood-pressure to relieve indirectly the tension in the region of congestion, and some means to prevent the development of the second stage, or stage of secretion, if possible. Methods used to meet one of these indications will many times meet one or more of the others; hence the treatment is often very simple.

If the patient is first seen in the morning, or before the middle of the afternoon, the best treatment is a saline purge of some description, as exemplified by the Seidlitz powder or by the effervescing magnesium citrate or Rochelle salt, or castor oil if that is preferred. If the patient is seen first in the evening, a less quickly acting cathartic is advisable, and none is better than a small dose of calomel, as from 0.05 to 0.20 gm. (about 1 to 3 grains), depending on the age of the individual, combined with 0.50 to 1 gm. (7½ to 15 grains) of sodium bicarbonate. Or, 1 grain of calomel may be given with an ordinary compound aloin pill or tablet. The old-fashioned Dover's powder is still given by many physicians and often works well, but may cause considerable nausea. Also, opium or morphin in any form tends to inhibit free action of the bowels, which is undesirable. One of the best treatments is one of the coal-tar products, such as antipyrin, acetanilid or acetphenetidinum. Any one of these may be given in one fair-sized dose or in two medium-sized doses, or in several small doses. One gm. of antipyrin would be a full dose; 0.50 gm., repeated in five or six hours, would be a medium dose; 0.30 gm. of acetanilid would be a large dose, and 0.10 gm. might be repeated at three-hour intervals for three times. A satisfactory method is a combination of acetanilid with sodium bicarbonate, and a prescription similar to the following is often very valuable:

	Gm.		
℞ Acetanilidi	0|25	or	gr. v
Sodii bicarbonatis..........	2|50		gr. xl

M. et fac chartulas 5.
Sig.: One powder every two or three hours.

A similar combination may be given in tablets, if preferred. It should be remembered that caffein has been shown not to protect the heart from depression caused by large doses of a coal-tar product; therefore, there is no object in adding caffein to such a prescription. When these coal-tar products are ordered, it is well to give coincidently hot lemonade. Perspiration is more readily caused by this means.

Provided the patient is not soon to be subjected to exposure, a hot bath is another efficient means of relieving internal congestions, and can be used coincidently with the other treatment. Acidum acetylsalicylicum (aspirin) is now more largely used than almost any other drug to abort colds. The laity, on account of the instruction which they have received of the dangers of acetanilid and similar drugs, now all buy and use this drug with the greatest freedom. It can cause cardiac depression, and should not be used *ad libitum*. If preferred, it may certainly be ordered.

Rhinitis tablets are sold everywhere to the laity, and are largely used by physicians. These are various combinations of morphin, atropin, strychnin and aconitin. The minute dose of aconitin ordered probably generally has no action. If one desires the activity of aconite, it is best to give it in a tangible form and dosage, namely, the tincture of aconite, a drop perhaps every half hour or hour, until the pulse shows the activity of the drug. However, this treatment ordinarily requires that the patient be seen within a certain number of hours by the physician, to ascertain whether or not the aconite should be stopped, unless the doses are limited in number. The old aconite treatment of colds has mostly given place to the newer treatments described above. The whole rhinitis tablet combination probably represents principally the action of atropin with some help from the morphin, both of which will dry up the secretions of the nostrils and throat. The small amount of strychnin probably is not very active. Sometimes minute doses of quinin enter into these combinations, but that probably is not active. In other words, it is a question if a small dose of atropin sulphate, given frequently, does not act as well as one of these rhinitis combinations.

There is no question about the drying up of secretions by morphin, if this drug is pushed. Rarely is such treatment needed. The old-fashioned treatment of a hot foot-bath, a hot whisky punch, and the patient put to bed is a treatment that is often successful. The upper air passages and the head are relieved from congestion by such treatment, the blood-vessels of the surface are dilated by the alcohol, and the patient perspires more or less and the treatment is conducive to comfort. In this age, however, when other vasodilators are accessible, it is rarely necessary to resort to alcohol.

Quinin sulphate has been used for years as an abortive treatment of colds, and the laity, until more recently adopting acetylsalicylic acid, have always resorted to this drug. Small doses would probably not have any very decided action; large doses are inadvisable at this stage of the congestion because of the tendency to congest the middle ear.

Spraying or snuffing solutions into the nostrils at this stage is inadvisable. The throat may be gargled with warm physiologic saline solution, which is roughly represented by ¼ teaspoonful of salt to half a glass of warm water. If the patient has been known to be exposed to some acute throat or nasal infection, more active antiseptic gargles and sprays may be used; but an acute coryza will rarely be aborted by local treatment.

If the inflammation is not aborted and the second stage develops, that of profuse mucus and some mucopurulent discharge, then cleansing of the nose and throat becomes urgently needed. At this stage all of the foregoing abortive measures should cease. A patient who has been more or less deprived of food, except a small amount of liquid nourishment for from twenty-four to thirty-six hours, may now resume his normal diet.

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[2] Freudenthal, Wolff: New York Med. Jour., Jan. 3, 1914, p. 1.

The more or less purulent discharge from the nostrils should not be allowed to remain blocking up the passages. Consequently, atomizing with warm saline and alkaline solutions should be more or less frequently done. Various compound solutions or tablets for solution are offered, but there probably is no advantage in these combinations over more simple ones. The simplest cleansing solution is one made from ½ teaspoonful of salt and ½ teaspoonful of sodium bicarbonate to a glass of warm water, or half these amounts for half a glass of water. To be properly soothing, the solution should always be warmed. The same solution may be used as a gargle. If a mild antiseptic is needed, saturated solutions of boric acid or borax are efficient. If stronger antiseptic solutions are required or advisable, hydrogen peroxid is valuable, as 1 part of the official aqua hydrogenii dioxidi to 4 or 5 parts of warm water for a gargle, or 1 part to 7 or 8 parts of warm water for a nasal spray. Nasal spraying and proper cleansing of the nose protects the adjacent sinuses from infection.

Cleansing the nasopharynx by snuffing back a solution from a teaspoon or a small vial, or snuffing back a spray, or gargling and then throwing the head forward and washing the nasopharynx, protects the eustachian tubes from infection. Two cautions should be suggested: first, that douching of the nasal passages should not be done with the nostril blocked, or with a high placed douch reservoir, as the pressure is likely to be sufficient to send fluid into the eustachian tubes or into the sinuses, and cause inflammation of such parts. Most of the patented douch apparatus are inadvisable. The second precaution is that it is not well to cleanse the mucous membrane of the nostrils too thoroughly of mucus before the patient goes into the outside air, especially if that air is dust-laden. The proper time to spray is when the patient is to remain in the house for a short time; or if he is sprayed and then must go out of doors, he may receive a non-irritant oil spray to furnish a coating for the mucous membrane, this to be used after the alkaline spray. Or a small plug of cotton may be placed in the nostrils.

If the secretion from the nose is tenacious and hard to dislodge by blowing the nostrils, ammonium chlorid may be a drug of value. It has been used as a stimulant to the upper air passage mucous membrane as well as to the bronchial mucous membrane. It may be given in a simple preparation as:

		Gm. or c.c.		
℞	Ammonii chloridi..........	5		ʒ iss
	Syrupi acidi citrici.........	25	or	fl.℥ i
	Aquae..............q. s. ad	100		fl.℥ iv

M. et Sig: A teaspoonful, in water, every three hours.

If the coryza tends to become subacute and prolonged, tonic treatment is required; a small dose of quinin and a small dose of iron, with or without arsenic and strychnin, are advisable. Or calcium glycerophosphate may be given in doses of 0.30 gm. (5 grains) in capsule, three times a day, after meals. The following tonic capsule may be used, and the doses may be modified for a child:

		Gm.		
℞	Arseni trioxidi................	0|04		
	Strychninae sulphatis........	0|04		*aa* gr. ⅔
	Ferri reducti..................	1|0	or	gr. xv
	Quininae sulphatis...........	2|0		gr. xxx

M. et fac capsulas siccas 20.
Sig.: A capsule three times a day, after meals.

If the mucous membrane of the nose and throat does not return to health, and the secretion of mucus does not seem to be sufficient, a great promoter of secretion is an iodid, and the best salt is the sodium iodid. The dose required is not large; 0.10 to 0.20 gm. (1½ to 3 grains) three times a day, is generally sufficient.

Various menthol, camphor and pine oil preparations are used as sprays or applications for the nostrils, sometimes with good results, or as inhalants when the nostrils tend to become closed and cause discomfort by occlusion. Such treatment has its use at times. Spraying with suprarenal solutions is sometimes of advantage, but sometimes is followed by more congestion. Some nose and throat specialists use suprarenal preparations constantly. Such treatment certainly many times is efficient in temporarily relieving congestion and giving comfort.

This discussion of the treatment of common colds would not be complete without reference to the vaccine treatment. While the exact value of such treatment has not been determined as an abortive treatment or as a treatment that shortens the course of the disease, the enthusiastic recommendation of such treatment by some writers should be recognized. When there is sinus infection, autogenous vaccines would seem indicated.

An interesting paper on the subject of vaccine treatment of common colds, including considerable bibliography, is that of Dr. Jessie W. Fisher.[3]

ACUTE PHARYNGITIS

The abortive treatment of this inflammation is the same as that described for acute colds; but if a child is discovered to have a sore throat, a swab should be sent to the board of health for examination, and the child should be immediately sent home, lest diphtheria or scarlet fever be the cause of the condition.

With a simple pharyngitis, soothing alkaline gargles, as previously described, should be the treatment. A very simple, pleasant and efficient gargle is as follows:

		Gm. or c.c.		
℞	Acidi borici...............	2		ʒ ss
	Potassii chloratis..........	5	or	ʒ iss
	Aquae menthae piperitae...	200		fl.℥ vii

M. et Sig.: Use undiluted as a gargle, every three hours.

(To be continued)

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[3] Fisher, J. W.: Boston Med. and Surg. Jour., June 5, 1913, p. 834.

One Minute Biographs.—No. 1. The Father of Preventive Medicine. The early history of our hero is veiled in myth and mystery. Born of a persecuted race, adopted as a foundling by a princely house, forced to flee the country for committing murder, the subject of this sketch exhibited marvelous insight and remarkable powers of administration and leadership. Although not a physician as we understand the term, and living long before the days of bacteriology, he yet was able to draft and enact a sanitary code whose guiding principles are still regarded as correct. In this code he originated an entirely new system of medicine, totally opposed to the prevailing plan. For the curative and therapeutic methods then universally followed, he substituted the more philosophic and wiser hygienic and preventive method. Moreover, in the regulations which he formulated, emphasis is laid on discharges from the body (blood, pus, mucus) as vehicles of disease, and on personal cleanliness and isolation as the chief means of preventing infection. A hygienist whose influence has made itself felt throughout the world and the father of preventive medicine,—we salute Moses, maker of sanitary laws.—*Weekly Bull. Dept. of Health*, City of New York.

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SATURDAY, JANUARY 9, 1915

THE CHLORIN CONTENT OF DRINKING WATER

Although chemically pure water does not exist in nature, the substances ordinarily present in solution are not regarded as impurities in the hygienic sense, unless either they are themselves directly injurious to health or from their association are indicative of dangerous pollution although in themselves they may be harmless. Impure water from the hygienic point of view, in contrast with the strict chemical sense, is water that is unfit for domestic use.

The amount of chlorids commonly found in natural waters is not objectionable; in fact, the quantity thus consumed is much less than the amounts constantly used in seasoning food. The quantity of chlorid in potable waters may, however, be an important indication of the pollution of surface waters with sewage, since the latter is rich in chlorid derived from urine. Aside from such accidental contaminations, the chlorin content of waters may vary greatly in different localities owing to natural causes. It is influenced by the proximity to the ocean or other bodies of saline water, by proximity to natural deposits of salt, and by geologic features of the locality. These possibilities must therefore be borne in mind in forming a judgment of the hygienic fitness of potable waters on the basis of their chlorid content.

The health authorities of the state of Massachusetts deserve credit for having demonstrated on a large scale the influence of the proximity of the ocean on the inland ground waters. It had long been appreciated that the amount of chlorin in surface waters near the seaboard is considerably higher than obtains in samples from inland parts remote from the coast. The classic investigations of the Massachusetts authorities about twenty years ago showed very clearly that the contribution of ocean spindrift and blown spray to the surface waters may extend much farther inland than had been suspected. Furthermore, it was demonstrated in Massachusetts and in the adjoining state of Connecticut that the unpolluted surface waters varied in their chlorin figures with surprising uniformity relatively to their distance from the sea. When areas with the same chlorin content were plotted on the map the successively lower "isochlorin" regions were found to run parallel with the coast line, thus demonstrating the influence of the ocean on the inland waters. Within slight margins of error the chlorin of uncontaminated ground waters of a given area approximates a normal, so that the estimation of chlorin would form a rapid method of gaging, for preliminary purposes, the relative purity of any water sample. These facts have made it essential for the sanitary water analyst to know the normal chlorin content of the waters of any given region before passing judgment on the purity of a sample of the water on the basis of the chlorin found in it.

A recent investigation conducted by Barr[1] at the University of Glasgow has confirmed the American finding that the ocean has an influence on the chlorin content of surface waters not limited to the waters of the seaboard only. It is exerted through the blown spray deposited on the land by all forms of precipitation, varying with the distance from the ocean and diminishing as it extends inland. The new report brings out the added fact that the spray particles, following the laws which govern all particulate matter, are more abundant in the lower strata of the air. For this reason the isochlor lines may become deflected by elevations of the land. The influence of the ocean spray is greater where the land is continuously low from the shore, but the prevailing winds also have an unmistakable effect. In the estimation of the ultimate results of the ocean's influence on the chlorin content of inland ground waters, the factors of the configuration of the land surface and wind prevalence are inseparably connected, as the land elevations may in great part assist or nullify any action exerted by the winds. For sanitary science the importance of having certain districts mapped out into areas of known chlorin content in surface waters on which our potable supplies are dependent becomes obvious.

AN OLD-TIME CLINICAL OBSERVER

Popular medical tradition, by one of those curious errors so frequent in popular medicine, makes the "dog-days" the time of the year when dogs are most likely to go mad, to develop rabies. As we have said before,[2] the term "dog-days" refers only to the dog star, which is then in the ascendant and has nothing to do with curs. The disease rabies incidentally spreads more virulently during the cold, damp months of winter than during the summer. The Puget Sound country had its epidemic last year beginning in

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[1] Barr, W.: The Influence of Ocean Spindrift and Blown Spray on the Chlorine Content of Inland Ground Waters, Jour. Hyg., 1914, xiv, 119.

[2] Rabies and Dog-Days, editorial, The Journal A. M. A., July 18, 1914, p. 246.

December. Hence, if dogs should be muzzled, this should be done in the winter as well as during the summer months. It is at this time too that the evidence of rabies in stray dogs should be sought, to prevent, if possible, the inoculation of human beings.

It is interesting to realize how long ago clinical observers among physicians and surgeons recognized exactly the symptoms displayed by a mad dog, and wrote them down for the benefit of their professional brethren and for the protection of the public. John Ardern, for instance, the old English surgeon of the fourteenth century, who was a specialist on the treatment of fistulas everywhere in the body, gave in one of his lesser works, "On The Classification of Medicines," a description of the symptoms displayed by a mad dog that is nearly if not quite as complete as anything that has been done since. Mr. D'Arcy Power,[3] in his paper on the "Lesser Writings of John Ardern," quoted a paragraph from this which shows the acute powers of clinical observation of the old medieval surgeon. There is a quaintness about the old English in which it is couched that gives it an added interest and proclaims how long ago it was that such fine clinical observation was at work. We should premise that the old word for mad was "wood," and that the old printers used "y" for "i" on every possible occasion.

> The tokenys of a wood dogge ben these; the furste is he knoweth not his lord ne his mayster & he falleth into a voyd goying allone with boowynge of his heed & hangynge of the erys [ears] as other wyse thanne he hadde hem in his he'the & the yene[4] [eyes] of him ben rede & the fome cometh out at the mowth & he wole berke [will bark] at his oune schadowe & he hath ane hos [hoarse] berkynge & other houndes fleene from hyme & berken towardys hyme. And yf a schyvere [slice] of breed [bread] be folden or wette in the bytynge of the sore & yoven [given] a dogge to ete, yf that he ete it, it is a token that the dogge is not wood, for and the dogge be wood that other dogge that the breed is yoven to wole not ete it, but that he be over moche hungry, and yf he denye to ete the seyde breed out-take [except on] the condicione aforseyd thane is the dogge wood.

Ardern dwelt on the length of time that might intervene between the bite and the development of the symptoms, and in this perhaps went farther than most of the pathologists and physicians of our time would care to follow him. There has always been some doubt, however, as to whether even years might not intervene between the bite and its consequences, and whether a person might not be a "carrier" of the as yet unknown microbic cause of rabies and still not suffer from its symptoms, somewhat as do so many pneumonia and diphtheria bacillus carriers. Ardern knew that the first symptom of the development of rabies was hydrophobia, that is, dread of water, because the very thought of swallowing a liquid brought on a spasm of the throat muscles. His paragraph on rabies in human beings deserves to be placed beside his description of the affection in animals.[5]

> The bytynge of a wood dogge is more venemous & perlous [perilous] thane it is of a serpente, ffor the venyme of a wood dogge ys hydd often tymes by the hole yere togydere [whole year together] & other whyle by the ii [two] yere & after some auctours it wole endure vii yere or [ere] it sle [slay] a man. And note wheyther it be longe tyme hydd or schorte or that it slee, there comene tofore to the pacient thes tokenys medlynge & chaungynge of wytte [change of disposition] & resone & abhominacione & lothsomnesse of cold water that is clene & pure. And whane suche sygnys fallen to him that is byten of a wood hound schall unnethe or ellys never [hardly or else never] escape it.

As we learn more of the actual writings of the old medieval physicians and surgeons, we come to realize better that the popular medicine of the middle ages, so full of irrational and superstitious practices, was something quite apart from actually scientific medicine and surgery. The text-books of the old time, so often fortunately preserved for us, show us what worthy colleagues we had in medicine even six and seven centuries ago.

CAN FAT BE ABSORBED FROM THE LOWER BOWEL?

Under the ordinary conditions that prevail in the alimentary tract, 95 per cent. of all the fat ingested has disappeared from it before the intestinal contents reach the lower end of the ileum. There is experimental evidence to show that absorption of fat is not interfered with by extirpation of the large intestine. The lower end of the bowel clearly is not necessary for a satisfactory utilization of the fats of the diet.

From the evidence just cited, it does not follow, on the one hand, that the large intestine cannot participate in the absorption of fats if occasion arises, nor does it give the slightest assurance, on the other hand, that fats can find their way directly from this portion of the gastro-intestinal canal into the nutrient mediums of the body. The clinical practice, still somewhat in vogue, of injecting fat emulsions in the form of nutrient enemas into the rectum naturally presupposes an absorptive capacity on the part of the lower bowel. All of the modern studies of fat absorption, in turn, postulate a digestive cleavage of this foodstuff before it can traverse the walls of the alimentary tract.

Several years ago Neumann found that the occurrence of suspended fat particles in greater or lesser abundance in the blood can be demonstrated by an ultramicroscopic examination, and the comparative richness of the circulating medium in fat thus estimated. This method of examination has accordingly been applied in the physiologic institute of the University of Vienna to settle the mooted question of fat absorption after rectal administration.[1] Nakashima found that the characteristic picture presented by the blood under the ultramicroscope—the sign of fat absorption after milk or cream are taken by mouth—is completely missed after rectal introduction of the same fat-yielding foods. Occasionally after introduction of emulsified fats in larger quantities into the lower bowel, signs of slight absorption of them were noticed; not, however, if the return of the contents beyond the ileocecal valve and toward the mouth was prevented by ligation of the intestine at that point. Histologic examination of the intestine has likewise borne out the evidence furnished by the other method. After undue distention of the large intestine there may be some travel of contents backward toward the regions where adequate digestion and absorption of fat is known to occur. It is futile, however, to depend on this uncertain and rather abnormal phenomenon of antiperistaltic propulsion for effective nutritive results. These facts serve to emphasize anew the shortcomings of the older attempts at rectal feeding, to the defects of which we have directed attention on previous occasions.[2]

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[3] Power, D'Arcy: The Lesser Writings of John Ardern, Section on History of Medicine, Seventeenth Internat. Med. Cong., London, 1913.

[4] The old spelling "yene" is less common than "eyne," but it was the typesetters who regulated spelling in the early days of printing. They spelled as they pronounced. Consistency in spelling was not then the jewel we have made it.

[5] Power, D'Arcy: Tr. Seventeenth Internat. Med. Cong., Section on History of Medicine, London, 1913.

In contrast with the failure of fat emulsions to be transported into the tissue fluids through the wall of the lower bowel is the fact of their disappearance from the peritoneal cavity. Like other fine suspended particles, those of fat can be withdrawn from this abdominal space and make their way via the lymphatics into the peritoneal circulation. The transport is far more easy from the peritoneal than from the somewhat similar pleural cavity. Any pathologic change, such as inflammation in the membranes lining these tissue spaces, at once stops the absorptive processes.

THE BOOKKEEPING OF HUMANITY

In the study of disease, whether for the development of measures of prevention or for cure, uniform and accurate vital and morbidity statistics are so essential that no apology need be made for repeatedly referring to the subject. It is to be deplored, however, that even after many years of agitation, only about 60 per cent. of our population is included within the approved area of registration of births and deaths. Satisfactory figures regarding morbidity are recorded in a very much smaller area. The American Medical Association has continually and consistently fought for such measures. In 1846, by resolution, the Association requested the profession to take immediate concerted action to secure legislation to establish offices for the collection of vital statistics, and provided for a committee from each state to report on a uniform system of registration of marriages, births and deaths. In 1855 a resolution was adopted providing for a committee in each state and territory to study and "report on its medical topography, epidemic diseases, and the most successful treatment thereof." Some action looking to these ends has been taken at various sessions since that time, and has culminated in the model bill for the registration of births and deaths, drafted and indorsed by the Association in cooperation with other national bureaus and bodies.

Trask,[1] in a recent article, gives a brief historical account of the efforts in this and other countries to secure adequate registration laws, the requirements of effective laws, the methods of computation of vital and morbidity statistics, the results and conclusions to be obtained from them and the practical benefits to be derived from their study concerning the distribution of diseases, their prevalence, epidemiology and the means for their eradication. At present, twenty-four states have satisfactory registration of births and deaths. As shown by Trask, only one disease — smallpox — is reportable in all the states; such a highly infectious disease as scarlet fever in 45; diphtheria in 46; measles in 31; tuberculosis in all forms in 29; typhoid fever in 35; whooping-cough in 27, and cerebrospinal meningitis in 29, while many other dangerous diseases are reportable in a smaller number of states, dwindling down in many instances to one or two. Ophthalmia neonatorum, a disease responsible for much blindness and disability, is reportable in only fourteen states, and the occupational diseases, which are coming to be recognized as the source of a large proportion of the burden of expense of public hospitals and other public and charitable institutions, are so far reportable in only fourteen states, and this number only for one of the most easily recognized and prevalent occupational diseases — lead poisoning.

Needless to state, the value to the public of accurate vital and morbidity statistics, collected and recorded under a uniform system in all the states, would be great. Opposition by physicians to measures for this purpose is indefensible. Their responsibility in this respect is stated in an emphatic way by Trask when he says:

> Among practicing physicians, at least in the United States, there has at times been the feeling that the knowledge of a disease in a patient is privileged information which they should not be called on to impart. In communities where the law requires the notification of the disease this feeling has no legal basis and the physician who does not make report is not a law-abiding citizen. But aside from the legal aspects of the matter there would seem to be little justification for such a course. Every physician has a number of individuals or families who look to him, and properly so, not only for treatment, but also for such reasonable protection from dis-

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[1] Nakashima, K.: Zur Frage der Resorption des Fettes im Dick- und Mastdarm, Arch. f. d. ges. Physiol., 1914, clviii, 288.

[2] The Absorption of Fat-Like Substances, editorial, The Journal A. M. A., Sept. 13, 1913, p. 872; The Modification of Fats During Absorption, Feb. 28, 1914, p. 698.

[1] Trask, J. W.: Vital Statistics, a Discussion of What They Are and Their Uses in Public Health Administration, 1914, Supplement 12, Pub. Health Rep.

> case as he is able to give. The failure to report the occurrence of a case of communicable disease in one patient may lead to its spread to others among his clientele whose rights he has ignored. He therefore violates the intent and spirit of the ethical principle of the protection of patients, among whom must be considered the well together with the sick. The notification of disease is in the interests and for the protection of the community, and as his patients are usually members of the community their interests are ignored and because of the antisocial whim or supposed convenience of the individual affected with a notifiable disease, they are deprived of the protection they have a right to expect. It would seem that the physician who fails to report his cases of preventable diseases required to be notified may properly be considered as actively obstructing public health administration.

Victor C. Vaughan[2] thus states the obligation of the physician to the public:

> In the future the training of the medical man must be developed largely with a view to his broader relations to the public. His proper function must be to prevent, rather than cure disease. The physician's duties are to become more and more largely official in the sense that his services are to be rendered to the community, and not exclusively to the individual.

The collection of information concerning the communicable diseases, the bookkeeping of humanity, is as important, if not more so, than any type of census which a nation may make, and adequate, uniform vital statistics laws constitute the first step in securing them.

SEASONAL VARIATION IN COMPOSITION OF THYROID GLAND

If special proof were needed of the importance of an accurate standardization of therapeutic products prepared from natural resources without the refinement and chemical purification which applies to most of the inorganic compounds and alkaloids, for example, it would be found in the evidence furnished by recent studies of the very marked seasonal variation in the iodin content of the thyroid gland of different species of animals. We have already called attention to the work of Seidell and Fenger[3] on this subject. These investigators have had exceptional opportunities to obtain suitable animal material for their studies, and have used products from the very places which serve as sources for the preparation of gland products in this country. Their findings in respect to the existence of seasonal variations have been verified in a general way by data obtained in England from sheep.[4]

A repetition of the analyses of the iodin content of the thyroids of sheep, beef and hog extended for another year by the American investigators have substantiated their earlier statements and included additional determinations to show that other constituents than iodin vary regularly with the season. Thus there is a change in the phosphorus and ash content of these glands, and the amounts of these constituents vary inversely with the iodin. This is explained on the assumption that phosphorus does not form a part of the active iodin complex of the gland, but only of the supporting glandular tissues. An increase in the percentage of iodin would, therefore, naturally be accompanied by a decrease of phosphorus. Consequently it appears that neither the composition of the active iodin complex nor that of the supporting tissues of the gland changes with the season, but only the relative amounts of the two.

Several factors may be considered of importance in accounting for the seasonal change in composition and activity of the thyroid gland. Thus atmospheric temperature, diet and periods of activity of the reproductive functions might play a part. A consideration of the several causes of the seasonal change has led the public health authorities to the conclusion that the environmental temperature factor is the most important of all. Physiologically it is, of course, interesting to learn the true reason for these functional variations; but from the point of view of the therapeutic use of thyroid products, on the other hand, it is important to realize the necessity of standardizing for administration substances present in raw materials of varying potency.

Current Comment

HEALTH IN OUR ARMY

The Report of the Surgeon-General of the Army for 1914 is a document of unusual interest. The outline of the report in the letter of transmissal states that the non-effective rate for disease for 1913 (the calendar year covered by the report) is 23.97 a thousand, the lowest rate ever recorded for our army. This rate indicates the average number of men in every thousand incapacitated for duty each day during the year. The death rate for disease was 2.57, the total number of deaths being 397, 40 of which were from tuberculosis, 23 from pneumonia, 17 from nephritis and 15 from organic heart disease. Probably the most interesting portion of the report is that dealing with the control of preventable diseases. The record made in our army in the obliteration of typhoid fever has become a subject of world-wide comment among military and sanitary authorities. Only three cases of typhoid fever occurred in the army during 1913; two were in recently enlisted recruits who were admitted to the hospital with the disease inside of the first six days of service, while in the third case, only partial immunity through vaccination had been established. All three of these patients recovered. By way of contrast, the report states that in 1912, there were 18 cases with 3 deaths; in 1911, 44 cases with 6 deaths; in 1910, 142 cases and 10 deaths, and in 1909, 173 cases with 16 deaths. Among all the troops scattered along the Mexican border and in large camps in Texas, not a single case of typhoid has occurred in an inoculated man since June 4, 1912. This means that typhoid fever as a military disease, as an accompaniment of military service and camp life, is practically a thing of the past. Only those familiar with the awful ravages of this disease in all previous wars under all conditions in which large numbers of men were herded together under unfavorable conditions can appreciate the enormous economic and military value of this fact. The report is full of interesting data, so numerous as to make it possible to refer only to the most interesting. The medical department of the army, June 30, 1914, consisted of 426 medical officers, 91 reserve officers, 16 contract surgeons, 28 commission dental surgeons, and 39 contract dental surgeons. The remainder of the 5,044 persons connected with the department were army nurses and members of the hospital corps. Of the 19 candidates who had passed the preliminary examination for appointment to the medical corps, 17 successfully completed the course of instruction in the army medical school and 16 were recommended for commissions. The library of the Surgeon-General's office contained on June 30, 1914, 219,494 volumes and 330,320 pamphlets on medical and surgical subjects. The army medical museum contains 47,120 specimens. Reports from the various hospitals, laboratories, territories and provinces are all of great interest and impress the reader with the wide range and scientific thoroughness of the work done by our army medical corps.

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[2] Vaughan, Victor C.: Pennsylvania Med. Jour., November, 1913.

[3] Seidell, A., and Fenger, F.: Seasonal Variation in the Iodine Content of the Thyroid Gland, Jour. Biol. Chem., 1913, xiii, 517. The Iodin Content of the Thyroid Gland, editorial, The Journal A. M. A., March 29, 1913, p. 1000.

[4] Compare Guyer, R. G.: Pharm. Jour., 1913, xci, 123. Martin, N. H.: Ibid., p. 126.

PRACTICAL PHARMACOLOGY

The simplification of our materia medica, as represented in the lists of remedies in New and Nonofficial Remedies and in Useful Drugs, has made possible the adoption of rational therapeutic measures by those who are convinced of the inefficiency of methods heretofore in vogue. The brief descriptions in these works do very well for those who are already familiar with the actions of the drugs listed, but are not sufficient for a completely intelligent and discriminating use of such drugs. This knowledge the practitioner is assumed to have obtained in courses of pharmacology in the medical school. However, pharmacology has made such great strides that the teachings of fifteen years ago would be rather unreliable to-day as regards many subjects. Moreover, the subject is so full of details, that attendance on a single course of lectures results usually only in general impressions and not in a real working knowledge. The general practitioner is often accused of ignorance of pharmacology, but in general we believe that such ignorance is due to sheer inability to keep up with the advances in general medical knowledge. There is reason to believe that need of this knowledge is widely felt and is becoming ever more acute as the profession is getting away from the old-time ready-made prescriptions. Whether these were proprietary or merely "Favorite Formulas" they did not demand an intimate knowledge of drug actions. Where there were so many shots in the blunderbuss, it seemed rather immaterial to know just where they would hit. However, with the progress of medicine, it has become pretty clear that the disease was rarely hit by such scattering shots, whatever else they might destroy. The profession is quite well convinced of the failure of the various "compounds," and is ready to try a more direct marksmanship. Before it can do this successfully it must have a more accurate knowledge of its weapons, the drugs. It is true again that this knowledge may be obtained from the various text-books on pharmacology. However, none of these is written precisely for the practitioner who is contemplating turning over a new leaf. Again, many men, with the very best intentions, find it difficult to read a text-book from cover to cover, but would follow with interest a serial presentation of the subject. It is in response to this demand that The Journal is presenting in serial form[1] an outline of the facts of modern pharmacology prepared especially for the practitioner, giving the important elementary facts which the doctor needs to understand regarding the use of drugs; written from the standpoint of its special audience; not assuming too much familiarity with modern discoveries in the allied sciences, but counting on a more practical knowledge of disease than is customary in the ordinary text-books which are intended primarily for students.

THE ADVERTISING POLICY OF THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES

The *American Journal of the Medical Sciences* is, with one exception, the oldest medical journal in the United States. For nearly ninety years it has recorded the progress made in medicine, not only in this country, but also abroad. Few journals in the United States have for so long held such a high place in the regard of the best men in our profession. No journal has presented in its reading pages material of a higher grade of scientific excellence. In this respect it has been a star of the first magnitude in the medical literature in America. With one exception it has always stood for the highest ideals in medicine. This exception has been its advertising pages. While these have not at any time been of such character as to deserve serious condemnation, at the same time they have been used to promote preparations that were not creditable to American medicine. This, undoubtedly, was due largely to a theory, not only in medical but also in lay journalism, that there is a separation of the literary pages from the advertising section that absolves the editor from all responsibility for the latter. Now even this exception is removed; for, while no regular announcement has been made in the journal itself, we understand that hereafter no advertisements of proprietary medicines will be admitted to its pages that have not the approval of the editor. The publishers of the *American Journal of the Medical Sciences* are to be congratulated on the advanced stand they have taken; it means much to scientific medicine to have this journal aid in the efforts that are being made for more rational therapeutics in this country.

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[1] Practical Pharmacology, this issue, p. 147.

CORONER REFORM IN NEW YORK

June 13, 1914, at the request of the New York City Club, Mayor John P. Mitchell ordered an investigation of the coroners' office of that city. The report[1] has just been made public. As was expected by many, the management and methods of the coroners' offices were found to be open to grave criticism, while the entire system of elective coroners is shown clearly to be expensive and inefficient. The report states that the elective coroner in New York City represents a combination of power, obscurity and irresponsibility which has resulted in inefficiency and malfeasance, that under the present system, the honest and efficient performance of the important public duties entrusted to the coroner are practically impossible. Of the sixty-five coroners in New York City since consolidation, not one, according to the report, was qualified for the position, most of the candidates being selected "to balance the ticket and for purely political reasons," many of them being absurdly ignorant of the scientific and legal aspects of their work. Most of the coroners' physicians have also been appointed for political reasons, "have been drawn from the ranks of medical mediocrity," and their medical examinations and official reports are without scientific or legal value. Lack of supervision has favored graft and extortion. "Far from being of assistance," says the investigator, "the death certificates of coroners' physicians introduced a large degree of error into the vital statistics of the city." An analysis of 800 inquisition papers shows in 40 per cent. complete lack of evidence to justify the certified cause of death. Incompetent medical work of the coroners' physicians deprives the community of an absolutely necessary deterrent to crime. Numerous homicides have failed of detection for this reason. Infanticide, poisoning and criminal abortion, according to the report, can be carried on almost with impunity. The system of coroners' juries makes the administration of justice in the Coroners' Court a scandal and farce. They can be and are easily packed, they offer a ready means of petty extortion, and their verdicts are of no legal value. The records of the coroners' office are meager, uninforming and practically valueless. Coroners have compelled the employment of favorite undertakers, have injured the rights of deceased workmen, and have helped corporations to escape from liability for workmen's deaths. The report also states that the coroners' office is overmanned with unnecessary employees at salaries grossly in excess of the value of their services. The present coroners' system costs the city of New York over $172,000 a year It is distinctly branded by the report as a public scandal and disgrace which should be abolished immediately. A system of medical examination, similar to the plan now in operation in Massachusetts, is proposed. Skilled and experienced pathologists appointed by the mayor as the result of competitive examination will, it is estimated, save the city at least $50,000 a year, will terminate the present ignorant inefficiency and corrupt performance of the elective coroners' functions, and for the first time in the history of New York City will utilize the facts of legal medicine for the protection of the community. The scathing statement of facts in the report, as shown by the summary above, places before the New York General Assembly the definite responsibility for present conditions and future improvement. The historic office of coroner has long since ceased to be of value for performing its original functions and has never, with occasional exceptions, been developed to its full possibilities. The adoption of this reform in New York should be an example to all of our other large cities to investigate the work of the coroners' office in their own city and to institute immediate measures for better methods. It is true that conditions in all large cities are not as bad as in New York, but this is due to the accidental fact that a competent man has been elected coroner, rather than to any merit in the system.

HARPER'S WEEKLY ENTERS THE LISTS

Many of our readers will remember the exposé by George Creel of the C. H. Carson fraud operated from Kansas City, Missouri. Carson was a quack who fleeced his victims by selling them tissue paper supposed to be "magnetized" and by dispensing "vital force" in the form of petrolatum containing red pepper. In the January 2 issue of *Harper's Weekly*, Mr. Creel commenced a series that bids fair to arouse wide interest. The first article was a general introduction to the subject. In the present issue of *Harper's* (January 9) Mr. Creel gets down to specific cases. Under the head of "Suffering Women" he takes up such nostrums as Wine of Cardui, Viavi, and Chichester Pills, the Cora B. Miller mail-order concern, the Fort Wayne fakeries —now fortunately out of existence—and Harriet M. Richards or the Woman's Mutual Benefit Company. Altogether times seem to be looking dark for the exploiter of proprietary frauds. Movements like these instituted by high class publications such as *Harper's Weekly* do much to indicate a change in public opinion on the subject of fraudulent proprietary remedies.

The Requisites of the Modern Doctor.—To achieve the greatest success in his practice, the modern doctor must be a man possessed of logical mind, medical skill and moral courage. He must not only be able to recognize the early signs and symptoms of diseased conditions, and to draw correct conclusions therefrom, but must also have the courage to tell his patients of his findings truthfully and fearlessly. . . . On the other hand the doctor of to-day owes a duty to the state. . . . By reporting promptly all cases of communicable disease that come under his notice, the doctor lends a valuable service not only to the community but also to his individual family. A man who allows cases of diphtheria to go without treatment until they are moribund, who refuses or fails to recognize tuberculosis until the lungs are filled with râles and the sputum with tubercle bacilli, or who neglects cases of cancer until they are inoperable, or at least beyond recovery from operation, has no place in the modern practice of medicine. The people are demanding better things and they are entitled to more consideration; on the other hand men who are prepared to practice modern medicine need have no fear that there is no demand for such service.—Guy L. Kiefer, *Journal Michigan State Medical Society*, October, 1914.

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[1] Wallstein, L. M.: Report on Special Examination of the Accounts and Methods of the Office of Coroner in the City of New York, 1915.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ILLINOIS

Sanatorium Site Purchased.—The city commissioner of Rock Island has purchased a site for a municipal tuberculosis sanatorium at Seventeenth Street and Brashar. The site consists of 4.33 acres for which $4,500 was paid. The medical commission, in charge of the plan for the proposed institution, consists of Drs. Joseph De Silva, Louis Ostrom, Jr., and Bernard J. Lachner.

Chicago

Work of the Iroquois Hospital.—During the last year 17,437 emergency cases were cared for at the Iroquois Emergency Memorial Hospital, nearly 7,000 more than in the previous year.——At the eleventh annual services of the Iroquois Memorial Association, held December 30, Health Commissioner George B. Young, Dr. Patrick Machler and Dr. Clara P. Seippel were the principal speakers.

Psycopathic Hospital Report.—Dr. Haim I. Davis reports that during 1914, 2,807 patients were received at the hospital of whom 1,677 were men and 1,130 women. The patients were distributed as follows: Chicago State Hospital, Dunning, 1,177; Elgin State Hospital, 397; Kankakee State Hospital, 516; Watertown State Hospital, 7; Peoria State Hospital, Bartonville, 29; Jacksonville State Hospital, 1; discharged cured, 633; transferred to County Hospital, 2; died, 36.

Hospital Staff Selected.—President Reinberg of the Board of County Commissioners of Cook County has nominated the following staff of consulting physicians and the nominations have been approved by the county board: Drs. Arthur D. Bevan, Frank Billings, Charles P. Caldwell, James A. Clark, Alfred C. Cotton, Arthur R. Edwards, William A. Evans, Edward A. Fischkin, Burton Haseltine, James B. Herrick, Albrecht Heym, Anton A. H. Holmboe, Charles E. Kahlke, Jacob S. Kauffman, Blue Island, Franklin H. Martin, Mary G. McEwen, John B. Murphy, Albert J. Ochsner, John R. Pennington, Stephen R. Pietrowicz, William E. Quine, John A. Robison, Otto L. Schmidt, Daniel A. K. Steele, Daniel P. Teter, Camillo Volini, Charles J. Whalen and George B. Young.

INDIANA

Medical Dispensary at Muncie.—A free medical dispensary at Muncie was opened December 19.

Personal.—Drs. William N. Wishard, John F. Barnhill and John H. Oliver have resigned from the staff of the Indianapolis City Hospital.——Dr. Francis M. Magers, Churubusco, is under treatment at St. Joseph's Hospital, Fort Wayne.

MASSACHUSETTS

State Health Council Sworn In.—The oath of office was administered December 12, to the State Advisory Health Council.

Hospital Site Purchased.—The State Board of Insanity has purchased a site containing 281½ acres north of Trapelo Road, Waltham, for $68,500, on which to establish the new Metropolitan Insane Hospital.

Medical Lectures.—In accordance with its usual custom the Faculty of Harvard Medical University is giving its course of free medical lectures at Harvard Medical School on Sunday afternoons, from January 3 to May 9.

Personal.—Dr. Frederick C. Brigham, Springfield, was stabbed in the abdomen by an unknown assailant, December 25, and is said to be in a critical condition.——Dr. Sylvester E. Ryan, Springfield, has been appointed associate medical examiner of Hampden County, vice Dr. Theodore S. Baco, Springfield, resigned.——Dr. William J. Delehanty, Worcester, has been appointed a member of the board of trustees of the Worcester State Hospital, succeeding Dr. Samuel B. Woodward, resigned.——Dr. Francis W. Anthony, Haverhill, has been elected president of the Massachusetts Society of Examining Physicians and Surgeons.——Dr. Frederick L. Bogan, Boston, has been elected a member of the school committee.——Major Robert W. Forster, Lawrence, has resigned from the medical corps of the National Guard.

NEVADA

Hygienic Laboratory Announcement.—The State Hygienic Laboratory of the University of Nevada at Reno, announces its readiness to perform the complement fixation test for syphilis on Thursday of each week. The test is offered to the people of the state through their physicians free of charge. Specimens received at the laboratory later than Thursday noon will not be examined until the following Thursday.——The laboratory offers bacteriologic and biochemical examinations and analyses for the diagnosis of communicable diseases, and also assistance in the prevention and control of communicable diseases within the state.

NEW YORK

Personal.—Dr. John H. Cotter has resigned as a member of the Poughkeepsie Board of Health.——Dr. William C. Wood, president of the Gloversville Board of Health for ten years, has resigned.

Health Movies.—The motion pictures prepared by the State Health Department for the Panama Pacific Exposition were exhibited December 16 in Albany, and will be shown throughout the state before they are taken to California. The first series illustrates Infant Welfare and the second the Evils of Insanitary Surroundings.

New York City

New Morgue Opened.—The new morgue in connection with Bellevue, which is in the basement of the Pathological Building at First Avenue and Twenty-Ninth Street, was opened recently, and 150 bodies were removed from the old morgue. The new morgue is to be known as the mortuary and has greatly improved arrangements for the identification of bodies.

Personal.—Dr. Arnold Sturmdorf has been elected president of the New York Physicians' Association for the coming year.——Dr. A. H. Page of Kings County Children's Hospital, Brooklyn, was operated on for appendicitis, December 25, and is reported to be doing well.——Drs. Mabel Palliser of Brooklyn and Edith Bertine have been appointed interns to Bellevue Hospital. There are now five women on the staff at Bellevue.

Quadricentenary of the Birth of Vesalius.—A meeting in commemoration of the four hundredth birthday anniversary of Vesalius was held at the New York Academy of Medicine, January 7, at which Dr. William H. Welch, Baltimore, delivered an address on "Vesalius and the Spirit of the Time"; Dr. Fielding H. Garrison, editor of the *Index Medicus,* spoke on "Anatomical Illustration Before and After Vesalius," and Dr. Harvey Cushing of Harvard Medical School delivered a lecture on "The Portraits of Vesalius," illustrated by lantern slides. In connection with this meeting there was a public exhibition of early editions of the works and plates of Vesalius and of the anatomists and surgeons of his time. This exhibition was open from January 5 to 9, inclusive.

Patent Medicines Controlled by Sanitary Code.—At its meeting, December 31, the Board of Health adopted a completely revised sanitary code, which has twenty-three new sections. The most important of these regulates the sale of patent medicines and requires that the names of every ingredient used in preparations of this class shall be registered with the Department of Health. This regulation goes into effect on Dec. 31, 1915. This ordinance was passed in the face of very strong opposition on the part of interested parties, and its passage was largely due to the strenuous efforts of Dr. Sigismund S. Goldwater. This article further states that any proprietary medicine shall be deemed misbranded if it does not contain all the ingredients as filed with the Health Department, or if it contains more than the ingredients as filed. Other sections of the code require that coroners must notify the Health Department of the death of any person immediately after they receive such information; that in the manufacturing, handling and sorting of cigars and cigarettes no person engaged in such work shall at any time touch with lips, teeth or tongue any cigar, cigarette or tobacco to be offered for sale; that no person with tuberculosis or other contagious disease can be employed as a teacher in a public or private school without permission from the Health Department, nor shall such persons be permitted to manufacture or alter garments in tenements unless the article is for the use of the person making it, nor shall such a person be permitted to work where food and drink are prepared or sold, and all workers in such places shall be prepared to submit to a physical examination by the department. A number of other minor changes have been made in the code which will greatly add to efficiency of the public health administration.

NORTH CAROLINA

Commercial Travelers' Room Opened.—A new room in the Presbyterian Hospital, Charlotte, furnished and outfitted by the Travelers' Protective Association and the United Commercial Travelers, has been opened and is now ready for use. It is known as "The Drummer."

Personal.—Dr. James A. Anderson, McAdenville, has removed to Charlotte.——Dr. Francis J. Clemenger, Asheville, has returned after two years' laboratory work in England.——Dr. W. R. Brandon, after eighteen months' hospital service in Baltimore, has located at Midway.——Dr. Benjamin E. Washburn, Rocky Mount, has resigned as health officer of Nash County to accept a position with the Rockefeller Foundation.

Instruction of Health Officers.—The State Board of Health proposes to conduct in the executive offices and the various other working departments, including actual work in the field with some of the best of the whole-time county health officers, a school, or course of instruction covering a period of some six to seven months for the instruction of physicians proposing to become county or municipal health officers in the state. The tentative course as outlined by the secretary of the board, Dr. Watson S. Rankin, Raleigh, is as follows: Four weeks in the executive offices where fundamentals as well as details will be studied; four weeks in vital statistics, followed by three weeks in a study of popular sanitary instruction; four weeks at the State Tuberculosis Sanatorium; four weeks in the Hygienic Laboratory, concluding with six weeks of actual work under a field worker in county health work. At the close of the period of instruction, if the work has been performed satisfactorily, a certificate signed by the governor of the state and the officials of the board will be awarded. In this way it is hoped to be able to offer counties and municipalities medical men who at once will be able to engage in active practical public health work without having to find out many things by experience. This will also tend to standardize the county and municipal health work throughout the state.

PENNSYLVANIA

Quarantine Lifted.—The State Live Stock and Sanitation Board on December 30 issued a notice of modification for the foot-and-mouth quarantine, relieving Philadelphia and Juniata counties from all restrictions and reducing the area in all of the other counties under quarantine except Berks, Lehigh, York, Lancaster and Lebanon. Pittsburgh and the townships near it are retained in quarantine. The ban on hunting because of the danger of spreading the disease was raised.

Not a Passenger Killed on the Pennsylvania System.—Not a passenger out of 188,411,876 carried on all the lines of the Pennsylvania Railroad system last year was killed. The Pennsylvania Railroad lines east of Pittsburgh in the past two years carried 311,675,794 passengers and not one of them was killed in an accident to a train. In four of the past seven years, 1908, 1910, 1913 and 1914, more than 558,000,000 passengers—five times the population of this country—were carried by the Pennsylvania lines east of Pittsburgh without a single one being killed in a train accident.

Personal.—Dr. Henson F. Tomb, Johnstown, who was operated on at the Memorial Hospital in that city recently, is reported to be improving.——Dr. Jerry C. Murphy, York-Haven, is reported to be seriously ill with pneumonia at his home.——Dr. Gregg A. Dillinger, Pittsburgh, who was stabbed by an unknown assailant at the door of his home December 18, is improving, but is not out of danger.——A banquet was given at the University Club, Pittsburgh, December 19, by the active staff of the West Penn Hospital in honor of Dr. James W. Macfarlane, who after thirty-seven years of service on the active staff of the hospital, has retired and been made a member of the consulting staff. Dr. Macfarlane was presented with a silver loving-cup.——Dr. Harry W. Bernhardy, Rochester, was given a birthday surprise party by the physicians of Beaver Valley, at which he was presented with a gold watch chain.

Philadelphia

Appropriation for Unemployed.—On December 10 Councils, with only one dissenting vote, made an appropriation of $50,000 for the relief of the unemployed of the city. This appropriation is to be expended by the departments of health and charities from the Emergency Aid Committee.

To Raise Funds for Woman's College.—At a recent meeting of the alumnae of the Woman's Medical College of Pennsylvania and others interested in the institution, an organization was effected for the purpose of planning ways and means for raising money for the college. The meeting was called by the graduate council December 13.

Personal.—Dr. Charles W. Burr has been appointed consulting neurologist and Dr. P. B. McCullough consulting dentist at the Municipal Hospital.——Dr. James William White has just published a pamphlet entitled "A Primer of the War for Americans," in which he discusses the cause of the war from the pro-allies' point of view.

Presbyterian Hospital to Replace Present Buildings.—To provide for the future needs of the Presbyterian Hospital, the board of trustees of that institution has decided to replace the present structures at Thirty-Ninth and Filbert Streets with a new group of buildings in the Georgian style of architecture. It is proposed to build seven structures, the cost of which will exceed $1,000,000. The plans are in charge of the building committee, which has chosen John T. Windrim architect to prepare plans.

Fund for Paris War Hospital.—At the meeting of the committee on the Philadelphia Ward in the American Ambulance Hospital, held December 15, in the Franklin Building, Dr. James William White, chairman of the committee, reported that the fund had reached the sum of $7,024.98. An executive committee was appointed, consisting of John Wanamaker III, Charlton Yarnall, Dr. George E. de Schweinitz, William Ellis Scull, Dr. Robert G. LeConte, Dr. James William White, Effingham B. Morris and John J. Collier.

Hospitals Need Money.—Many Philadelphia hospitals will have to curtail the extent of their work unless they soon get money in the shape of private contributions. These institutions are caught between the increase of charity patients and an increase in the cost of supplies due to unemployment, and to a decrease in contributions due to the financial depression and the plea for charity in unusual cases. The Episcopal Hospital, long considered one of the strongest institutions in the city, has been forced to cut down its limit of ward patients from a flexible point somewhere above 400 to a maximum of 275. The number of patients, however, who come to the hospital for day treatment has not been limited.——Other hospitals which may have to cut down the number of ward patients are the Pennsylvania, the Woman's College Hospital, Samaritan, St. Christopher's and St. Timothy's.

SOUTH CAROLINA

New Hospital for Negroes at Columbia.—On December 1 a hospital for negroes was opened at Columbia by Dr. Matilda A. Evans of that city.

Donation for Indigent Baptists.—The Baptist State Convention, at a recent meeting, agreed to donate $6,000 during the year for the care of indigent patients in the Baptist State Hospital, Columbia.

Appeal for Pellagra Hospital.—Dr. James L. Jefferies, representing the Spartanburg County Society and the Spartanburg Health League, appeared before the county grand jury, November 28, to prevent an appeal for an increased appropriation for the maintenance of the pellagra hospital at the county home, from $4,000 to $6,000.

Health Day in Schools.—Greenville County has designated Friday, December 11, as a day for the study of public health in the schools. The day is to be devoted to cleaning and making sanitary the schools and their surroundings, reading compositions by the children on public health topics and talks by physicians on public and personal hygiene.

State Society Meeting.—The Medical Society of South Carolina celebrated its one hundred and twenty-fifth annual meeting, December 14, at Charleston and the following officers were elected: president, Dr. Edward F. Parker; vice-president, Dr. Robert Wilson, Jr.; secretary, Dr. Albert Nathan, and treasurer, Dr. Daniel L. Maguire, all of Charleston.

SOUTH DAKOTA

Personal.—Dr. Harry C. Durkee, Gettysburg, has been appointed physician to the Cherry Creek Indians, with headquarters at Faith.——Dr. Andreas A. Wipf, Freeman, is reported to be under treatment in a hospital in Yankton, as the result of an automobile accident near Yankton.

State Board Advocates Preventive Service.—The report of the State Board of Health asks for better financial provisions for its work in the state and states its conviction that its efforts will be more effective if devoted to preventive rather than curative measures in its attempt to control contagious, communicable and occupational diseases. The board also advocates that the state supply diphtheria antitoxin at the cost of production.

TENNESSEE

Personal.—Dr. William E. Martin, Columbia, suffered a loss of $10,000 by fire, December 10.——Dr. John A. Price, Nashville, has been appointed physician to the state penitentiary, vice Dr. Z. D. Massey, Sevierville, resigned.

Middle Tennessee Physicians Hold Meeting.—At a meeting of the Middle Tennessee Medical Association held at Murfreesboro, November 19 and 20, the following officers were elected: president, Dr. Oval N. Bryan, Nashville; vice-president, Dr. Frank B. Reagor, Shelbyville, and secretary-treasurer, Dr. Roy W. Billington. Lebanon was selected as the next place of meeting.

Work of the Rockefeller Sanitary Commission in Tennessee to be Continued Temporarily by the International Health Commission.—With the passing out of existence of the Rockefeller Sanitary Commission on Jan. 1, 1915, the Tennessee State Board of Health has faced the necessity of discontinuing the hookworm campaign initiated by the commission. The hookworm campaign has made a deep impression and aroused great public interest. Surveys have been conducted in over sixty counties, and dispensaries have been operated in forty-four of these. There are a number of counties, however, in which dispensaries should be operated. The International Health Commission has therefore agreed to carry on the work of the Rockefeller Sanitary Commission temporarily in the state. It is expected that this will permit continuance of the work to July 1, 1915, by which time it is hoped that means will be found for its further continuance as necessary.

TEXAS

City Hospital Opened.—The Municipal Hospital, Austin, was opened to receive patients January 1.

North Texas Physicians Hold Meeting.—The North Texas Medical Association held its seventieth semi-annual session at Dallas, December 8 to 10, and elected the following officers: president, Dr. Raleigh W. Baird, Dallas; vice-president, Dr. Murphy M. Morrison, Denison; secretary, Dr. Hugh Leslie Moore, Dallas; treasurer, Dr. Charles R. Johnson, Gainesville.

Abolition of Quarantine Officers.—The State Board of Health at its final meeting, December 9, recommended the abolition of quarantine officers along the Rio Grande border and their employment as state inspectors and also recommended that the salary of the state health officer be increased from $2,500 to $4,000 a year and that he be required to devote his entire time to the duties of his office.

Personal.—Dr. Carrie Weaver Smith, Dallas, has been appointed a member of the committee to arrange the sociologic exhibit at the Panama-Pacific Exposition, and has gone to New York for conference with the national committee.——Dr. John B. Thomas, Midland, sustained a loss by fire of $3,500 December 19.——Dr. William M. Brumby, San Antonio, has succeeded the late Dr. John M. McCutchan, Waco, as assistant medical director of the Amicable Life Insurance Company.——Fire at Granbury, December 18, caused a loss of $600 to Dr. A. R. Jarrett.——Dr. Luther F. Johnson has been appointed full-time medical inspector for the city schools of Beaumont.

VIRGINIA

Personal.—Dr. John Mann, Richmond, has started for Europe, where he will work in the Russian Red Cross.——Dr. Edward A. Gorman has been elected health officer of Alexandria to succeed himself.——Dr. W. B. Ashburn, South Norfolk, who has been ill with septicemia for four months, is convalescent and has resumed practice.

Honor Deposed Hospital Head.—Physicians of Richmond and their wives were the hosts at a banquet given at the Arlington Hotel, December 18, in honor of Miss Marsh, superintendent of the Reid Memorial Hospital, and her assistant, Miss Sands, who were recently deposed, notwithstanding the protests of the majority of physicians of the city.

CANADA

Begins Sanitary Bulletin.—The Quebec Municipal Board of Hygiene and Statistics has commenced the publication of a sanitary bulletin. It will be issued monthly and will contain articles in English and French.

Hospital News.—The new St. Justine Hospital for Children has been formally opened in Montreal. It contains 180 beds.——The Children's Hospital, Toronto, has been enlarged by the addition of a new wing providing accommodation for fifty-two more patients.

Medical Reciprocity.—The Ontario Medical Council, at its meeting December 2, expressed its approval of the principles of reciprocity between Ontario and Great Britain. The matter was finally referred by the countil to a subcommittee, which was directed to bring in a report at the next meeting after ascertaining what the British Medical Association is ready to offer.

Free Medical Care for Toronto Citizens.—At a meeting of the Toronto Board of Health, December 16, and on suggestion of Dr. Charles J. C. O. Hastings, Toronto, medical officer of health, it was decided to furnish free medical advice to citizens who cannot afford to call in a physician, and the medical officer of health was authorized to employ a physician to attend to these cases.

Personal.—Dr. Cecil S. Mahood, medical officer of health, Calgary, Alberta, has been elected a Fellow of the Royal Institute of Public Health, London, England.——Dr. Arthur E. Ross, M.P.P., Kingston, is in charge of No. 1 Field Ambulance at Salisbury Plain, England. He has with him six recent graduates of Queen's Medical Faculty and three medical students of the fourth year. There are also three other Queen's graduates in the medical service and one in the navy.——Lieut.-Col. Herbert S. Birkett, M.D., dean of the medical faculty of McGill University, Montreal, is to be in command of the general hospital offered by McGill University for service in France. The personnel will consist of twenty-one officers, who must be members of the medical faculty of McGill, 100 men in the rank and file who will be drawn from the medical student body of all years. Prof. John George Adami and Dr. John M. Elder may go with this unit.——Dr. Arthur Mignault, Montreal, has been raised to the rank of lieutenant colonel in the army medical corps.——Dr. James McGregor, who for some time practiced in Megantic, Quebec, but who has recently been connected with the Presbyterian Hospital, New York, has been appointed surgeon with the European contingent on the American ambulance staff.——Dr. Charles J. Edgar, North Hatley, Quebec, has been appointed a surgeon in the military hospital at Netley, England.——Dr. George C. Hale, London, has been commissioned as medical officer of the Eighteenth Battalion for overseas service with the Second Contingent, and has been assigned to duty as medical officer at Queen's Park encampment, succeeding Major Archibald V. Becher, London, appointed sanitary officer of the camp.——Dr. James Samson, Windsor, announces that he will soon retire from practice and will engage in consultation work in Detroit.

GENERAL

Tri-State Society Meeting.—The Northern Tri-State Medical Association of Indiana, Ohio and Michigan announces that it will hold its forty-first semi-annual meeting in Elkhart, Ind., January 12.

New Officers.—At the annual meeting of the Porto Rican Medical Association held at San Juan, the following officers were elected: president, Dr. Pedro Gutiérrez Igaravidez, San Juan; vice-president, Dr. M. de la Pila Iglesias, Ponce; secretary, Dr. José S. Belaval, San Juan; and treasurer, Dr. Jacinto Avilés, San Juan.

Western Surgeons Hold Meeting.—The twenty-fourth annual meeting of the Western Surgical Association was held in Denver, December 18 and 19, under the presidency of Dr. Byron B. Davis, Omaha, Neb.; and the following officers were elected: president, Dr. Joseph Rilus Eastman, Indianapolis; vice-president, Dr. Van Buren Knott, Sioux City, Ia.; and secretary, Dr. Arthur T. Mann, Minneapolis (reelected). The 1915 meeting will be held in Des Moines, Ia.

A Warning.—The Journal is informed that a man, purporting to represent the Keystone Mfg. Co., Pittsburgh, appeared in Lima, Ohio, and sold to physicians such apparatus as hypodermic syringes, stethoscopes, thermometers, etc. He made collections in advance, allowing an extra percentage for cash with the order. Several physicians were victimized, as no goods were ever shipped and letters sent to the firm were returned unclaimed. Physicians should be wary of all offers of this character.

Southern Surgeons and Gynecologists Meet.—The twenty-seventh annual session of the Southern Surgical and Gynecological Association was held at Asheville, N. C., December 15 to 17, under the presidency of Dr. John Wesley Long, Greensboro, N. C. Cincinnati was selected as the next place of meeting and the following officers were elected: president, Dr. Bacon Saunders, Fort Worth, Texas; vice-presidents, Drs. Thomas S. Cullen, Baltimore, and Samuel M. D. Clark, New Orleans; secretary, Dr. William D. Haggard, Nashville, and treasurer, Dr. Le Grand Guerry, Columbia, S. C.

Hospital Ship for Fishing Fleet.—The U. S. Revenue Cutter *Androscoggin*, which has been transferred into a hospital ship for fishermen, has arrived at Baltimore ready for service. She will take on fuel and supplies sufficient for a two months' cruise, and will make a stop at Gloucester, Mass., where her commander will confer with the owners of the fishing fleet. From Gloucester the *Androscoggin* will cruise around Brown's Bank and the south shore of Nova Scotia, and will be prepared to receive for treatment fishermen incapacitated from illness or injury. Late in February the *Androscoggin* will return to Boston and outfit for a second cruise to Banquereau and Sable Island banks.

Bequests and Donations.—The following bequests and donations have recently been announced:

Home for Aged and Infirm Hebrews, New York, $1,000, and the residuary estate valued at about $30,000, to be divided among charitable institutions, principally the Home for the Blind, by the will of Esther Wyman.

Visiting Nurse's Association of Chicago, $5,000; Children's Memorial Hospital, $2,500 after a lapse of ten years, by the will of George H. Hale, Chicago.

Chester County, Pa., Hospital, $71,376.85 by the will of Townsend S. Lamborn of West Bradford Township, Chester County.

Montefiore Home, New York City, $2,500, by the will of Albert Rich.

Subscription for the hospital Saturday and Sunday Association, $17,935, up to January 1.

Examination for Physicians for Indian Service.—The United State Civil Service Commission announces an open competitive examination for physicians, men only, to be held on February 3, at various places throughout the United States, to fill a vacancy in the Indian service at the Haywood School, Wisconsin, carrying a salary of $1,100 a year. Unmarried eligibles without dependents are desired; applicants must be graduates or senior students in recognized medical schools, between 21 and 40 years of age, and citizens of the United States. Those who desire to take this examination should apply for Form 1412 stating the title of the examination for which the form is desired, to the United States Civil Service Commission, Washington, D. C., or the Secretary of the United States Civil Service Board, at any of the places at which the examination will be held.

Biologists Meet in St. Louis.—The American Association of Anatomists and the Federation of American Societies for Experimental Biology, comprising the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics and the American Society for Experimental Pathology, held their annual meetings in St. Louis December 28-30 as the guests of the Washington University Medical School. The scientific program contained about 180 titles. Addresses were delivered in memory of Drs. S. Weir Mitchell and Charles S. Minot. On Wednesday afternoon an excursion of the city was made in automobiles. Stops long enough to permit of tours of inspection were made at the Washington University and at the affiliated hospitals, the Barnes and St. Louis Children's. About 200 visitors were in attendance. Perhaps the most important business transacted during the session was in relation to the business conduct of the *American Journal of Physiology*. This journal, which since 1898, has been edited by Dr. William T. Porter, becomes by virtue of action taken at this meeting the official organ of the American Physiological Society, by which it is owned and managed. The management of the journal is now vested in the council of the society, which has been so reorganized as to insure for the journal the stability of policy that is essential to its successful publication.

FOREIGN

Switzerland Quarantines Against Cholera.—The *Policlinico* states that Switzerland has officially declared a quarantine against Russia, Austria, Servia and Galicia on account of the prevalence of cholera in these countries.

Spanish Academy of Medicine Elects a Senator.—It is one of the privileges of the Spanish Academia de Medicina that it is entitled to a seat in the senate. The member of the academy recently elected senator in this way is Dr. B. G. Alvarez, one of the editors of the *Pediatria Español*, the official organ of the Sociedad de Pediatria de Madrid.

Another International Prize Postponed on Account of the War.—The Umberto I prize offered by the Istituto Rizzoli will not be awarded this year and the date limit for sending in articles in competition has been postponed to Dec. 31, 1915, instead of 1914. This prize of $700 is awarded by the Provincial Council of Bologna for the best work or invention in the line of orthopedics.

Sanitary Brigade Organized at Madrid.—The first flying sanitary brigade in Spain has just been organized at Madrid and the occasion was celebrated by a *té de honor* in the Palace Hotel tendered by the Bloque Sanitario Español to the governor, all the alcaldes, public health officers and other officials of the province of Madrid. The brigade is intended to bring to bear at once all the measures known to science to aid the local public health authorities in case of an epidemic or catastrophe of any kind at any point in the province. The autotrucks of the brigade are equipped with sterilizing plants, services for vaccination, serotherapy, etc. Dr. Call, medical inspector for the province, is in charge.

WAR NOTES

Aid for Blinded Soldiers.—An endowment fund to aid soldiers who have lost their eyesight from wounds in the war has been started by Frau Minden, who has given the Berlin city authorities 100,000 marks ($25,000) for the purpose.

Cholera in Austria.—The *Wiener klinische Wochenschrift* reports 844 cases of cholera with 331 deaths in Austria during the week ended November 7; including 90 cases in Vienna with 10 deaths. During the following week there were 78 cases in Vienna with 19 deaths.

Olympic Games Building as Hospital.—It is stated in a British medical journal that twenty-five emergency hospitals have been established in Berlin, with accommodations for 20,000 men. One of the larger hospitals is housed in the new buildings erected for use in connection with the Olympic games.

Red Cross Festschrift.—In honor of its silver jubilee, the German Red Cross has issued a stately volume, profusely illustrated, containing the reports and experiences of the physicians who have been at the head of the various expeditions sent out by the Red Cross during the latest campaigns. J. Springer, Berlin, is the publisher and the price is to be 40 or 42.50 marks (about $10 or $10.50).

Automobile Ambulance Corps.—The Australian Expeditionary Force, which has gone to join the allies in Europe, is accompanied by an ambulance corps equipped with a special field ambulance, provided with all apparatus and appliances necessary for all kinds of military surgery, including a Roentgen-ray apparatus. The sides of the car are so constructed as to carry tentage sufficient for a field hospital.

Personal.—Major William J. Crookston, Pittsburgh, M.C., N.G., Pa., assigned Fourteenth Infantry, has accepted a directorship in the Austrian Red Cross and has started for Washington en route to Budapest.——It is announced that Drs. James William White, John B. Deaver and Charles H. Frazier and six other surgeons of Philadelphia will soon sail for Europe to take charge of a ward, endowed by Philadelphians, in the American Ambulance Hospital, Paris.——Dr. Alexis Carrel, New York, [illegible] nsive tour of investigation to the French [illegible] at the front.

Aid for Belgian Profession.—The report of the treasurer, Dr. F. F. Simpson, Pittsburgh, of the committee of American physicians for the relief of the Belgian profession, for the week ended Jan. 2, 1915, lists the following contributions:

H. F. W.	$ 25.00
B. C.	2.50
D. W. C.	25.00
V. P. G.	25.00
Mrs. J. B. M.	100.00
E. F. B.	5.00
C. W. N.	25.00
In memory H. N. C.	10.00
S. J. M.	15.00
D. B.	25.00
Total	$257.50
Disbursements	None
Contributions previously reported	$405.00
Grand total	$662.50

Our French Exchanges.—A communication has been received from the publishers of the *Revue de Médecine* and the *Revue de Chirurgie* stating that the departure for the seat of war of the editorial staff of these journals and of the printers from the publishing house made it necessary to suspend publication of both. They announce, however, that as soon as the war is over they will resume publication of the twin *Revues* and that the missing numbers for 1914 will be made up. The journals will be resumed under the same conditions as heretofore and the publishers express confidence that the subscribers and friends of the journals will keep up their interest in them which has made possible their success and the leading position they occupy in the world of science. Both are monthlies and were founded about thirty-four years ago. The contents of each have been listed and reviewed regularly in the Foreign Current Literature Department of The Journal.

Red Cross Notes.—The 200 boxes of clothing and blankets for the Belgians, recently sent to Holland, have been received and distributed.——An additional shipment of hospital supplies for the use of the Red Cross units at Pau, France, has just been made. This shipment includes 200 pounds of chloroform, 1,000 pounds of bandages, 5,000 yards of gauze, 10 bales of absorbent cotton, 200 pounds of permanganate of potash, tetanus antitoxin, surgical instruments and other hospital equipments.——Among the chief needs in the war zone are clothing for women and children and babies, overcoats for men, pajamas, shirts, convalescent robes, socks and bed linen.——During the past week a supplementary shipment of 100 cases of miscellaneous hospital supplies was sent to the British Red Cross, London.——The American Red Cross now has 44 surgeons and 150 nurses on duty in the war zone.——In response to an appeal, the American Red Cross, on December 31, sent a donation of $3,000 to an American committee in Pekin and made arrangements with the Surgeon-General of the Army to purchase supplies on the Pacific Coast for immediate shipment to the Pekin committee.——On December 31 the American Red Cross forwarded through the State Department $31,000 for the British, French, German and Servian Red Cross societies. Of the $6,000 sent to Great Britain, $3,000 is to be used to build two cottages, adjoining the Addington Park Hospital, Canterbury, for enteric fever cases.

LONDON LETTER

London, Dec. 18, 1914.

The War

THE TREATMENT OF WOUNDS

The controversy on the antiseptic versus the aseptic treatment of wounds of the war continues. Sir Anthony Bowlby, consulting surgeon to the expeditionary force, has contributed an important paper on the subject to the *Lancet*. He points out that in this war there is never an armistice for the burial of the dead or the relief of the wounded, and it is usually only at night that stretcher bearers can remove men who cannot walk. On the other hand, the motor ambulances cannot take the wounded to the clearing hospitals by night because they would draw fire if they showed lights. Men who are shot in attacks lie outside the lines unaided even for days, for stretcher bearers would be shot if once they went toward the lines to help either British or Germans. Men are left lying in the wet mud of manured fields till their torn trousers and their wounds are so soaked in a mixture of blood and dirt that it is impossible even to get the torn muscles mechanically clean, let alone aseptic. The rifle bullets are different from those used in the Boer War and produce more severe wounds; another cause of difference is that wounds are often produced at very short distances. When the opponents are only a few yards apart the most typical explosive effects are produced. Bowlby has seen the greater part of the muscles of the forearm torn and extruded through a huge rent in the skin. But the most horrible wounds of all are produced by shells. The limb is often so violently contused by the mass of jagged metal tearing its way through all obstruction that far beyond the wound the tissues are so injured that they slough in large masses. Large portions of clothing covered with mud are frequently thrust deep among the torn muscles.

Treatment at the clearing stations, for which any available building such as a barn or railway waiting room, town hall, or church is used, is attended with great difficulty. The wounded are brought here on the stretchers from the field. Perhaps the station is equipped for 200, and in less than twenty-four hours 1,000 wounded have to be dressed. It is seldom possible to remove all the blood and mud stained uniforms because there is little to take its place, and in fractures of the lower extremities the dressings and splints have to be applied as the patient lies in the stretcher raised on trestles. The usual routine for all flesh wounds of the punctured variety and for all abdominal and thoracic wounds is to paint the skin far around with 2 per cent. iodin in alcohol and to wash the wound with either phenol (carbolic acid) from 1 : 20 to 1 : 40; iodin from 1 to 2 drains to the pint; or strong hydrogen peroxid. The dressings consist of mercuric cyanid and absorbent wool. For a fracture without extensive laceration or comminution the same procedure is adopted; but for an extensive fracture with laceration, whenever it is possible, the wounds are enlarged under anesthesia and washed out with antiseptics.

THE BELGIAN PHYSICIANS' AND PHARMACISTS' FUND

In spite of the demands on the medical profession from all sorts of funds established since the war and the serious financial losses resulting, a generous response is being made to the request to help Belgian confrères in their grievous plight. A scheme is being organized to obtain the help of the whole of the medical and pharmaceutic professions. The British Medical Association, the various medical corporations and the universities, are cooperating. Already about $10,000 has been received. Many physicians are offering the hospitality of their homes to Belgian confrères, and the medical societies and universities are freely thrown open to them. At a meeting of the Royal Society of Medicine the chairman, Sir Henry Morris, welcomed a number of Belgian physicians and expressed the high appreciation of the profession for their heroic nation and the deep sympathy they all felt for the terrible sufferings they had borne. A Belgian physician, Dr. Phillippe, returned thanks for the generosity of the society in cordially receiving them and placing its wonderful library and laboratories at their disposal. At a meeting of the Edinburgh Obstetrical Society, Professor Jacobs of Brussels gave an address on the position of the medical profession in Belgium. He was most cordially received at a reception to welcome him given by the president. Their country had suffered terribly and physicians had not been spared. They were devoting their care, and if necessary, their lives to their country. But they had no medical stores, their homes and pharmacies were ruined, and some were carrying on practice in ruined buildings.

THE DUTY OF MEDICAL STUDENTS

Sir Donald Macalister, president of the General Medical Council, stated in his official address that the need for efficient physicians and surgeons in the field and at home is not less urgent than the need for efficient soldiers and sailors. He felt it his duty to press this consideration on senior students who, though they have nearly completed their curriculum, are ready to forego the prospect of early qualification and to enroll themselves straightway in the combatant forces. He has received a letter from Surgeon-General Sir Alfred Keogh which contains the following passage: "I think with you that the senior student is best fulfilling his duty to the country by getting his degree and then joining the army. The need for young qualified men will become great, and I should regret that the supply should be diminished."

THE MANUFACTURE OF ANILIN DYES

In a previous letter to The Journal I have mentioned the project, supported by the government, of manufacturing in this country the anilin dyes for which we have been almost entirely dependent on Germany. Fortunately this country is not wholly unprepared. Since 1878 there has existed in Leeds a School of Tinctorial Chemistry and Dyeing, which during the past years has been doing a work which will now make it possible to establish the manufacture of dyestuffs in this country, on such a basis as will enable it, even after the termination of the war, to maintain its position in the face of foreign competition. At the head is Prof. A. G. Green, an eminent man in the chemical world. The University of Leeds—of which this school forms an important technologic department—in response to an appeal from the government placed its resources at the disposal of the Chemical Trades' Committee, of which Lord Moulton is the chairman. Professor Green has temporarily relinquished his ordinary duties in order to give his whole time to the service of this committee. The staff of his department, together with a number of chemists appointed for the purpose by the government, are devoting their energies to the elucidation of the many difficult and complex problems involved in the work.

PARIS LETTER

PARIS, Dec. 10, 1914.

The War

SECONDARY HEMORRHAGES IN MILITARY WOUNDS

These constitute one of the most trying problems in military surgery. A wound may appear to be almost cured when suddenly fifteen or twenty days after the injury, sometimes even later, a secondary hemorrhage occurs and often is fatal. Even in some cases in which the hemorrhage is controlled for the time, it occurs again without apparent cause and the patient dies. These secondary hemorrhages were the subject of an interesting discussion at the Société de chirurgie.

The first question is that of determining whether these hemorrhages, which appear to be extensive, are not in reality to be attributed to an unrecognized arterial wound. This is the opinion of Professors Quénu and Pierre Delbet, and the greater number of surgeons who took part in the discussion. Dr. P. Reynier thinks that secondary hemorrhages probably result from the late detachment of a little cicatrix of the arterial wall which has been grazed by the bullet. On the other hand, Dr. P. Sebileau has often observed in military wounds vascular effusions at a distance.

For the treatment of these hemorrhages, it is not sufficient to apply compression or to make injections of gelatinized serum. It is necessary to cleanse the wound energetically, to curet the granulations and after being assured that the arterial trunk is injured, to tie the ligature as nearly as possible at the level of the hemorrhagic focus. Notwithstanding, as Dr. Quénu remarked, it is necessary to bear in mind the difficulties caused by the inflammation on the vascular walls. If necessary, the ligation should be made in healthy tissue leaving the operator free to perform the operation that follows. Dr. Tuffier thinks that it is necessary to distinguish different cases: (1) when the wound is not very septic and the artery is easily accessible, the two ends of the wound should be ligated; (2) if the wound is septic and gangrenous, the ligature should be tied as near as possible but outside of the septic focus in healthy tissue; (3) if the wound, while sufficiently aseptic to permit a ligature in situ, is situated where it is impossible to tie the ligature, the artery must be sought above the wound and in an easily accessible region; (4) when the bleeding vessels cannot be reached, a deep incision should be made, the focus cleansed and tamponed and then horse-serum injected.

There are cases in which the most careful search discovers no arterial lesion. Pierre Delbet advises curetting the wounds in such cases and removing all the granulating tissue, for it is this which bleeds. During this curetting of the granulations, which are extraordinarily abundant and thick, the hemorrhage is profuse, but it stops as soon as tissues which are apparently almost normal are reached. To this curetting it is advisable to add a dressing with sodium nucleinate.

Dr. Quénu recently observed a case of secondary hemorrhage due to a wound of the external iliac vein. The ulceration of the vessel seemed in this case to be attributable to the pressure of the drain introduced into the wound, although this drain had constantly diminished in volume. Dr. Savariaud remarked that the ulceration of iliac vessels in contact with the drains is nothing exceptional when these drains are of rigid rubber, cut transversely by the scissors at the moment when they are used. Such accidents may easily be avoided by the use of molded drains.

FITNESS FOR ACTIVE SERVICE BY MEN AFFECTED WITH AORTIC INSUFFICIENCY

At one of the last sessions of the Société médicale des hôpitaux de Paris, Dr. C. Aubertin declared that out of a comparatively small number of patients he had been able to observe, five, aged from 20 to 30 years, who, though affected with aortic insufficiency, had passed without accidents through a campaign including the battle of the Marne. None of them had shown edema, arhythmia, crises of angina, stethoscopic signs at the side of the lungs, increased volume of the liver or the slightest asystolia.

A SOCIETY FOR FACILITATING COMMUNICATION BETWEEN THE WOUNDED AND THEIR FAMILIES

There has just been formed at Paris, under the title of the Oeuvre de la visite aux blessés, an association for the purpose of bringing to wounded soldiers now being cared for in provincial hospitals, whose families live in the departments of the Seine and Seine-et-Oise and cannot go often to see them, any articles (letters, clothing, etc.) that these families may wish to send.

Death of Dr. Barde

Dr. Auguste Barde has recently died at Geneva, aged 74. He studied at Berlin under Dr. Albert von Graefe and at Paris under Dr. Meyer. At one time Dr. Barde attended Baron Adolphe de Rothschild at Naples when the latter was the victim of an accident to his eye. As a token of gratitude, the baron founded at Geneva a very well-organized ophthalmologic hospital of which Dr. Barde was director for more than a half century.

BERLIN LETTER

BERLIN, Dec. 1, 1914.

The War

CHOLERA IN PRISON CAMP

In the Russian prisoners' camp at Ulm, eleven cases resembling cholera have been detected, to which four patients have already succumbed. Although the diagnosis at this writing has not been established, appropriate measures have already been taken to hinder the spread of an epidemic. In East Prussia, also, a soldier has been brought back who was infected with small-pox in Galicia. This patient, also, is strictly isolated. With reference to the fact that we are likely to get typhus fever from Russia, which otherwise is almost entirely unknown to us, the government has issued a circular in which advice to physicians for combating the disease and especially directions for disinfection are contained.

MENTAL DISTURBANCES IN WAR

The Berlin clinician, Professor Bonhöffer, recently delivered a very interesting address on the experiences so far encountered with reference to mental disturbances in the war. He opposed the widely spread public opinion that, on account of the mental and physical demands which the war brings with it, mentally sound men become insane. Still, severe emotional strain is not without effect on the mental condition of the population, sometimes acting with great intensity. One may compare the frame of mind of the population through the mobilization with the extravagant ideas which appear in any individual who misinterprets so many things. Thus, a spy was brought to the Charité who in full daylight had climbed a wall in order to look at the barracks yard. He proved to be one of the imbeciles well known in the Charité. Another remarkable general phenomenon was the confusion of facts in the memory. Such positive and negative falsifications of memory show themselves also in the reports from foreign countries. All these disturbances are an acute lack of harmony between the intellect and the emotional side of the mind. In the army itself such a disturbance of mental equilibrium may be observed. Bonhöffer could report on seventy soldiers and officers who had been brought to the nerve clinic of the Charité since the mobilization. More than half of them showed a psychopathic constitution; 16 per cent. showed alcoholism in addition to epilepsy, symptomatic psychoses and organic diseases of the brain. Chronic alcoholism with delirium was observed only among the reservists and Landwehr men during the mobilization, induced by the excitement and the hardships of the journey and the prohibition of alcohol on the road. A striking feature is the large number of psychopaths who were thrown out of mental equilibrium either on account of apprehension or a slight wound or the exertions of the war. In times of peace the management of the army lays the greatest stress on excluding these elements from the army. If, in spite of this, the war permits the appearance of such psychopaths in the army, the explanation is in the continued emotional strain, the lack of sleep, etc., which finally bring about a condition in which pathologic phenomena disclose the slight and hitherto latent disposition. Among patients so affected there were only five active soldiers. There is no psychosis peculiar to war. That which was described as such in the Russo-Japanese War must be designated as a neurasthenic psychosis. Hysteria gives a good prognosis in contrast with traumatic neuroses involving financial interests. Bonhöffer has so far had no experience on which to base an opinion as to whether an increase of mental disease in the army is to be expected from the war. In the English army in the latter part of the campaign against the Boers, such an increase was observed, and also in the Russo-Japanese War. After the war of 1870 there occurred an increase of mental diseases both in the civil population and in the military.

Marriages

Roland R. Cross, M.D., U. S. I. S., Pine Ridge, N. Dak., to Miss Isabel Hunter of Dahlgren, Ill., at Rushville, Neb., November 19.

Charles D. Frederick O'Hern, M.D., Tulsa, Okla., to Miss Frances Hazel Larkin of Bartlesville, Okla., in November.

James George Williamson, Jr., M.D., Columbia, Tenn., to Miss Margaret Frierson of Chattanooga, Tenn., December 9.

P. A. Surg. Hugh de Valin, U. S. P. H. S., Washington, D. C., to Miss Frances Watson of New Orleans, December 28.

Wirt Bradley Dakin, M.D., Los Angeles, to Miss Hariette Ruecker of Portage, Wis., at Pasadena, Cal., December 31.

William Francis Finley, M.D., Lonsdale, Minn., to Miss Mary Grace Donovan of McGregor, Ia., September 15.

Harry Denton Stryker, M.D., Reading, Pa., to Miss Minnie W. Gring of West Reading, Pa., December 18.

Samuel Bernard Rosenzweig, M.D., to Miss Josephine Frances Taub, both of New York City, December 2.

William Aaron Bessesen, M.D., Albert Lea, Minn., to Miss Beatrice Gjertsen of Minneapolis, January 4.

Carroll Edward Foley, M.D., Lovettsville, Va., to Miss Charlotte Woody of Richmond, December 12.

Percy Hoxie Wood, M.D., to Miss Amelia Alcorn Russell, both of Memphis, Tenn., November 25.

Hugh Warren Brent, M.D., to Miss Helene R. Vogeler, both of Baltimore, December 16.

Foy Roberson, M.D., to Miss Helen Gribble, both of Durham, N. C., December 10.

Walter Edgar Barbour, M.D., to Miss Leake Clarke, both of Atlanta, Ga., recently.

Deaths

Paul Fitzsimons Eve, M.D. University of Tennessee, Nashville, 1878; College of Physicians and Surgeons in the City of New York, 1880; a Fellow of the American Medical Association; formerly president of the Tennessee State Medical Association and Nashville Academy of Medicine; local surgeon at Nashville for the Louisville and Nashville, and Nashville, Chattanooga and St. Louis railways and the Nashville Railway and Light Company; surgeon to Eve's Infirmary; one of the most prominent surgeons of the South; died at his home in Nashville, December 26, from septicemia, aged 58.

Robert Walker Ramsey, M.D. Jefferson Medical College, 1874; a Fellow of the American Medical Association; from 1900 to 1906 a member of the Pennsylvania State Board of Medical Examiners; coroner of Franklin County, Pa., from 1879 to 1882; a member of the medical staff of the Chambersburg Hospital and vice-president and director of the Chambersburg Trust Company; died at his home in Chambersburg, December 26, from arthritis deformans, aged 54.

John Wesley Carhart, M.D. College of Physicians and Surgeons, Chicago, 1883; a member of the State Medical Association of Texas; and for three years county physician of Lampasas County; for many years a clergyman of the Methodist Episcopal Church; who claimed to have built the first automobile of the present-day type; died at his home in San Antonio, Tex., December 28, from heart disease, aged 80.

Morley Da Costa Bates, M.D. Rush Medical College, 1891; a Fellow of the American Medical Association; instructor in medicine in his Alma Mater; a member of the staff and treasurer of Grace Hospital, Chicago, and physician to the Metropolitan West Side Elevated Railway Company; died in the Presbyterian Hospital, Chicago, December 24, from cerebral hemorrhage, aged 42.

Robert Dandridge Jackson, M.D. Medical College of the State of South Carolina, 1851; a member and one of the organizers of the South Carolina Medical Association; a surgeon in the Confederate service throughout the Civil War; for many years a practitioner of Jefferson County, Ala., died at the home of his daughter in Orrville, Ala., December 20, aged 84.

Roscoe McClellan Huffman, M.D. Toledo (Ohio) Medical College, 1913; a member of the staff of the Pool Hospital, Port Clinton, Ohio; while driving across the tracks of the Lake Shore Road at Port Clinton, in his automobile, December 20, was struck by a train and instantly killed, aged 25.

Franklin Van Buren Gildersleeve, M.D. New York University, New York City, 1866; a hospital steward and later assistant surgeon of U. S. Volunteers during the Civil War; afterward a practitioner of New York City; died in St. Francis' Hospital in that city, December 26, aged 72.

Andrew Jackson Smith, M.D. College of Physicians and Surgeons in the City of New York, 1863; a member of the Connecticut State Medical Society and for many years a practitioner of East Bridgeport, Conn.; died at his home, December 20, aged 75.

Kathrine Jane Rayl, M.D. University of Michigan, Ann Arbor, 1902; a Fellow of the American Medical Association; president of the Galion (Ohio) Hospital Association; died at the home of her mother in Galion, December 19, aged 51.

George G. Hitchcock, M.D. New York Homeopathic Medical College, 1870; for more than forty years a practitioner of South Hadley Falls; died at his home in that town, December 20, from the effects of a fall two days before, aged 65.

Wallace Kirkwood Hughes, M.D. Western Reserve University, Cleveland, 1859; for nearly half a century a practitioner of Berlin Center, Ohio; died at his home in that place, December 19, from arteriosclerosis, aged 79.

Francis Alvin Tillinghast, M.D. University of Vermont, Burlington, 1867; one of the best known practitioners of the Pawtuxet Valley, R. I.; died at his home in Arctic Centre, R. I., December 24, from pneumonia, aged 71.

Edwin Brown Harper, M.D. Ohio Medical University, London, 1896; for four years a member of the Ohio State Legislature from Summit County; died at his home in Clinton, December 2, from tuberculosis, aged 48.

Richard J. Leonard, M.D. University of Louisville, Ky., 1880; medical director of the Fraternal Bankers of America and Royal Fraternal Union; died at his home in St. Louis, December 19, from pneumonia, aged 64.

Emory Sherman, M.D. Rush Medical College, 1885; of State Center, Ia.; for many years a practitioner of Independence and Alden, Ia.; died at the home of his daughter in State Center, December 3, aged 78.

Calvin Jacob Paleir, M.D. Vanderbilt University, Nashville, Tenn., 1894; of Blowing Rock, N. C., and president of the local bank; died at the Charlotte (N. C.) Sanatorium, December 16, from arteriosclerosis.

James S. Eves, M.D. University of Pennsylvania, Philadelphia, 1862; a Fellow of the American Medical Association; died at his home near New London, Pa., December 17, from cerebral hemorrhage, aged 66.

Jay Sylvester Corcoran, M.D. University of Michigan, Ann Arbor, 1883; of Ubly, Mich.; a Fellow of the American Medical Association; died in the Hubbard Hospital, Bad Axe, Mich., December 10, aged 60.

John F. A. Clausnitzer, M.D. University of Leipzig, Germany, 1878; for more than thirty years a practitioner of the East Side, New York City; died at his home, December 20, from nephritis, aged 61.

James T. Strohecker, M.D. Jefferson Medical College, 1879; for many years a practitioner and druggist of Beavertown, Pa.; died at his home in that place, December 15, from heart disease, aged 62.

Edward Russell Cogswell, M.D. Harvard Medical School, 1867; a member of the Massachusetts Medical Society; died at his home in Cambridge, Mass., December 22, from pneumonia, aged 73.

Robert B. Travis, M.D. Memphis (Tenn.) Medical College, 1858; for more than half a century a practitioner of Benton County, Tenn.; died at his home in Camden, December 19, aged 84.

James E. Talbott, M.D. Medical College of Ohio, Cincinnati, 1875; a member of the Indiana State Medical Association; died at his home in Linton, Ind., December 18, aged 66.

Frederick Milton Phillips, M.D. New York University, New York City, 1893; of Newburgh, N. Y.; died from heart disease, December 21, while making a professional call, aged 45.

Abner White, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1880; for fifty-two years a practitioner; died at his home in Missouri Valley, Ia., December 12, aged 89.

Isaac N. Leyda, M.D. University of Pennsylvania, Philadelphia, 1876; until 1907, a practitioner of Manor, Pa.; died at his home in Sulphur, Okla., December 10, aged 69.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

NEUROSINE, DIOVIBURNIA, GERMILETUM AND PALPEBRINE

Report of the Council on Pharmacy and Chemistry

Neurosine, Dioviburnia, Germiletum and Palpebrine are "shotgun" proprietaries typical of the polypharmacy of the past three or four decades. They are marketed by the Dios Chemical Company, St. Louis, Mo. On the recommendation of the referee, the Council has authorized the publication of this report.

W. A. Puckner, Secretary.

Neurosine

According to the manufacturers, each fluidounce of Neurosine represents:

"Bromid of potassium, C. P.	40 grains
"Bromid of sodium, C. P.	40 grains
"Bromid of ammonium, C. P.	40 grains
"Bromid of zinc	1 grain
"Extract Lupulin	32 grains
"Cascara sagrada, fl. ex.	40 minims
"Extract Henbane	.075 grain
"Extract Belladonna	.075 grain
"Extract Cannabis indica	.60 grain
"Oil Bitter Almonds	.060 grain
"Aromatic Elixirs."	

No physician would think for a moment of prescribing all of the drugs contained in Neurosine for any one condition. Yet physicians are urged to use this nostrum in insomnia, hysteria, neurasthenia, migraine, neuralgia, delirium tremens and in a host of other conditions.

It is recommended in the treatment of epilepsy on this ground:

> "Neurosine is presented in a very palatable and agreeable form and can be administered for an indefinite time without untoward by-effects as so often attends the use of the commercial bromides. In order to secure lasting benefits the treatment should be extended over a long period of time."

The evident implication here is that the recognized drawbacks of bromid medication are due to impurities present in the commercial bromids and that the teachings of modern medicine with regard to caution in the use of bromids do not apply in the case of Neurosine.

The assurance is offered:

> "Neurosine contains no chloral, morphin or other objectionable drug—a fact of the utmost importance when administering medicines to neurotic women."

> "As a nerve-calmative and sleep-producer nothing can excel Neurosine . . . It should be borne in mind that this preparation contains no opium, morphine, chloral or habit-forming drugs . . . Neurosine being a harmless remedy is especially indicated for neurotic individuals."

Apart from cannabis indica, Neurosine contains no efficient hypnotic. Cannabis indica is a dangerous drug, whose administration to "neurotic individuals" is by no means free from danger—especially when it is given under a proprietary name that carries no warning of its presence.

Here is another recommendation—this time for chorea:

> "All authorities recommend the bromides, hyoscyamus and cannabis indica in this disease. These remedies are all combined in Neurosine, the ideal calmative for both children and adults."

On the contrary, practically "all [medical] authorities" will admit that it is undesirable to keep a child under the influence of bromids if this can be avoided. Such treatment is mentioned only for use as a last resort in extreme cases. Hyoscyamus and cannabis indica are mentioned in connection with chorea by few authorities, and then merely as probably valueless.

Not content with recommending the promiscuous use of this already too complex mixture, the Dios Chemical Company advises physicians to combine it with iron, when chalybeate and tonic effects are to be combined with "a nervine," with acetanilid for "irritable cough," headache and neuralgia, with antipyrin in asthma and with Dioviburnia—another Dios nostrum—in all female ailments. Neurosine and its congeners violate practically all the principles of modern therapeutics.

Germiletum

Germiletum is a member of the large class of alkaline antiseptic solutions with excessively complex formulas. In this case not only is the formula complex but also the Dios Chemical Company finds it impossible even to assign a constant composition to it—at least the "formulas" which appear on the different styles of Germiletum labels and advertising circulars vary greatly.

The company says:

> "We appeal only to the Doctor's judgment of his estimation of the formula."

> "Doctor you will readily determine from the formula the class of cases in which you have a right to expect satisfactory results."

Yet the "formulas" given present so great a variety and such confusion that it is not clear even to a chemist just what the Dios Company wants the medical profession to regard as the composition of Germiletum.

The following statements of "composition" have appeared at various times:

1. In an advertising circular sent out some time ago:

$$\text{“}[HBF_4 + BOH\ (OC_6H_4\ COOH)_2 + BOH\ (OC_6H_3COOH)_2 + C_3H_5BO_3 + CH_2O + C_{10}H_{14}O + C_{10}H_{20}O + C_{24}H_{28}N_3Cl.]\text{”}$$

2. In advertising circulars which have been received of late, being wrapped with a sample package and with the "large size" trade package:

$$\text{“}[C_7H_6O_2 + H_3BO_3 + C_3H_5BO_3 + (CH_2O)_3 + C_{10}H_{20}O + C_{10}H_{14}O + C_2H_6O]\text{”}.$$

3. In another advertising circular:

> "Germiletum is a slightly alkaline chemical solution of Borohydrofluoric Acid, Borosalylbenzoic Acid, Boroglycerine, Formaldehyde with Menthol, Thymol and Antiseptic Aromatics."

4. On the label of a sample package sent through the mails during 1914, and on the label of a "small size" trade package purchased in 1914:

> "FORMULA.—Borohydrofluoric Acid, Borosalylbenzoic Acid, Boroglycerine, Formaldehyde with Menthol, Thymol, Amyl Acetate and other Antiseptic Aromatics."

5. In the circular which was wrapped around the sample package referred to above, and around the "large size" trade package purchased at the same time that the "small size" package was bought:

> "Germiletum is a slightly alkaline chemical solution of Borobenzoic Acid, Boroglycerine Formaldehyde, with Menthol, Thymol and other Antiseptec [*sic*] Aromatics."

6. On the sample package, on the "small size" trade package and on the wrappers of the "large size" trade package:

> "Alcohol 18 per cent.; Formalin 3/4 M. per oz.; Amyl Acetate 1/3 M. per oz." (also written "Acetate Amyl.")

The label on the large trade package states that Germiletum contains "Formalin ½ M. per oz."

One and all of these various formulas spell mystery. The existence of some of the constituents is problematic; even if the theoretical possibility of such combinations be conceded, some of them could not exist in Germiletum, for they would be broken up by the alkaline fluid. As illustrating the contradictions which the formulas present: While the wrapper of the "large size" trade package claims that Germiletum contains ¾ minims Formalin (Formalin is a proprietary name for a 40 per cent. formaldehyd solution) the label on the bottle claims only ½ minim. Again, while the composition expressed in chemical symbols asserts that "H_3BO_3" (boric acid) is a constituent of Germiletum, the "formula" which follows it states that Germiletum has an alkaline reaction; hence it cannot contain much boric acid. Finally, the "small size" bottle of Germiletum purchased at the same time as the "large size" bottle and also the label of a sample package sent through the mails to a physician in 1914, give as a constituent "Borohydrofluoric Acid," which is mentioned neither on the label of the "large size" trade package nor in the pamphlet wrapped around it. The only information which these contradictory "formulas" can convey to a physician is that Germiletum is an unscientific, varying mixture of many drugs.

A trade package, having the name "Germiletum" blown in the glass, bears on the label recommendations for its use in the treatment of "catarrh," "Gastritis, Stomatitis, Gastric and Intestinal Catarrh," "Leucorrhea and Uterine Diseases," "Hemorrhoids," "Whooping Cough," "Tonsilitis and other forms of sore throat" and "Eczema."

The following statement on the label is designed to induce physicians to place false confidence in Germiletum to the danger of their patients:

> "The lying-in-room should be thoroughly sprayed with Germiletum. Can be relied upon to destroy the living particles which so generally constitute contagion."

This claim, as well as the assertion which appears on the label of a sample package and of the "small size" trade package that it is "PAR-EXCELLENT IN OBSTETRICAL PRACTICE" is almost criminal, as Fussell[1] has said, since to depend on any preparation of this sort is to court disaster.

The booklet around the trade package makes the claim that Germiletum "is the best antiseptic"—evidently largely because it is claimed to be "the blandest of all"—and that it is "thoroughly germicidal" and even that it is "the best disinfectant obtainable." It also contains such unwarranted and misleading claims and suggestions as:

> ". . . preparatory to all operative work—Germiletum should be used freely in spraying the atmosphere . . ."
>
> "Operative wounds, whether large or small, can be rendered thoroughly antiseptic by freely spraying them with Germiletum. . . ."
>
> ". . . it may be given internally in many dyspepsias and in all zymotic diseases. . . . In such conditions Germiletum is the ideal internal antiseptic and disinfectant."

In the present advertising, no evidence whatever is offered for the value of Germiletum, the Dios Company contenting itself with unsupported claims and cant phrases such as

> ". . . the truth is only reached through a final appeal to intelligent practical experience."

In the old circulars only crude, uncritical and meaningless tests to establish the antiseptic value of Germiletum are reported and none whatever as to its germicidal action. In the advertising matter sent out some time ago, for instance, were given "Microscopical, Bacteriological and Chemical Tests, Comparing Germiletum with Carbolic Acid." These tests have no value whatever, unless it be to show the worthlessness of the preparation. This is particularly true as regards a series of experiments on "Germiletum as a Preventive of Lactic Fermentation," in which one part of Germiletum in thirty parts of milk did not prevent fermentation. Such effect as indicated is probably due to the formaldehyd present. The tests show the absurdity of using the preparation for internal and external purposes. The referee challenges the therapeutic claims on the basis that they are extravagant and unsubstantiated. (The Chemical Laboratory of the American Medical Association reports that the alkalinity of Germiletum corresponds approximately to a 1 per cent. borax solution.)

Dioviburnia

Dioviburnia, another Dios nostrum, according to the label, has the following composition:

> "Every fl. oz. contains 3-4 dr. each of the fl. extracts, Viburnum Prunifolium, Viburnum Opulus, Dioscorea Villosa, Aletris Farinosa, Helonias Dioica, Mitchellae [*sic*] Repens, Caulophyllum Thalictroides, Scutellaria Laterifolia." [Lateriflora?—Ed.]

Further, according to the label, Dioviburnia contains 18 per cent. alcohol. If this statement is correct then the "formula" is false, for the fluid extracts named contain from 25 to 73 per cent. of alcohol. As—according to the "formula"—these fluid extracts constitute three-fourths of Dioviburnia, the average alcohol-content in the whole mixture must of necessity be much above 18 per cent.[1] According to the makers, Dioviburnia is "unexcelled" for:

> "Amenorrhea, Dysmenorrhea, Leucorrhea, Puerperal Convulsions, Prolapsus Uteri, Menorrhagia, Threatened Abortion, Parturition, Subinvolution, Miscarriage, and a general relaxed condition of the uterus and appendages, together with the various aches and pains peculiar to women."

Around the sample bottle of Dioviburnia is wrapped a booklet entitled "A Treatise on Uterine Diseases and Obstetrical Hints," said to be "For the Profession Only." The booklet has been prepared, physicians are told, to present "some very valuable suggestions" regarding the treatment of female disorders and the attention of the medical profession is "earnestly" called to the "very remarkable medicine," Dioviburnia. Further, it is said that Dioviburnia was devised by the Dios Chemical Company because there was an "absolute necessity" for some really efficient internal treatment in female diseases. The company backs up its statements by such claims as:

> "The most valuable preparation, therapeutically, ever offered."
>
> "[Contains] every essential for toning up the female organs of generation, and relieving pain."
>
> "A general and special tonic, antispasmodic and invigorating cordial."

While the company directs the attention of physicians to the "well-known, therapeutical effects of each individual constituent" of Dioviburnia, there is in reality little positive evidence regarding the action of any of the drugs contained in the nostrum. Most writers on materia medica do not even mention these drugs and the few who do discuss them, either question or deny their medicinal value. But if every drug claimed to be present in Dioviburnia had some actual demonstrated therapeutic properties, it still would be impossible to predict the action of such a combination in the many and varied conditions for which it is exploited. Certainly there is no warrant for such statements as:

> "In Painful Dysmenorrhea [*sic*] Dioviburnia is especially indicated, and its continued use will invariably give relief."
>
> "In cases of Leucorrhea of long standing, Dioviburnia, together with local treatment, invariably gives relief."
>
> "Dioviburnia is efficient in cases of subinvolution; it cures by its *tonic effects* . . ."

The effects of the drugs alleged to be present in Dioviburnia are not such as to justify the hope of either "cure" or "invariable relief." In a way the Dios Chemical Company seems to recognize the inefficiency of Dioviburnia since it frequently suggests that it be used in combination with drugs of known value; but it ascribes all favorable results to its own product:

> "In chronic constipation fluid extract of cascara sagrada aromatic may be combined with Dioviburnia."
>
> "In cases of habitual abortion, depending on syphilitic taint, a prescription containing the following should be used during the entire pregnancy:

℞	"Hydrarg. Chlor. Corros	gr. 1
	"Potass. Iodid	dram 1
	"Dioviburnia	*ounces* 16"

> "An Anemic or Chlorotic patient, suffering with absence of the menstrual flow, should take DIOVIBURNIA combined with Iron."
>
> "In leucorrhea depending on endocervicitis, hot astringent douches once daily should be given. Local applications of iodin are useful in chronic conditions. Internally, Dioviburnia promotes healing."
>
> "Rest in bed, hot douches of a one-half per cent. solution of compound cresol solution and Dioviburnia internally, a teaspoonful every 3 hours will rarely fail to cure endometritis in a few days."
>
> "In specific vaginitis, a solution of potassium permanganate (1 to 1000) should be used as a douche twice daily. Internally give the following:

"Sodii benzoate	½ ounce
"Dioviburnia	16 ounces

> "M. sig., Teaspoonful every three hours."
>
> "Prolapsus Uteri is benefited, and often cured, by DIOVIBURNIA combined with local treatment in the shape of tampons, pessaries, electricity, etc."

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[1] Fussell, M. H.: Dangers of Certain Ethical Proprietary Preparations to Both Physicians and Public, The Journal A. M. A., Oct. 7, 1911, p. 1196.

[1] Five of these fluidextracts have their alcohol-content determined by the Pharmacopeia or National Formulary. Three are not recognized and hence their alcohol-content is not defined by law. The alcohol-content of the mixture of fluidextracts said to be in *Dioviburnia* has been kindly furnished by five leading pharmaceutical houses. If the lowest alcohol-content of the several fluidextracts is made the basis of calculation, Dioviburnia should contain at least 30.75 per cent. of alcohol, or more than half as much again as the amount declared on the label.

If Dioviburnia will cure specific vaginitis, anemia, etc., so will a cobblestone make excellent soup. All that is necessary in the former case is to add certain potent drugs that might be indicated in the pathologic conditions mentioned and, in the latter case, to combine suitable amounts of beef, chicken, green turtle or vegetables, with herbs and other seasoning.

Palpebrine

According to the Dios Chemical Company, Palpebrine is "A Reliable External Ocular Antiseptic" having, it is said, the following composition:

> ". . . each fluid ounce contains 1/116 grain Sulphate of Morphia, 1/7 grain Sulphate of Zinc, 1/11 grain Bi-Chloride of Mercury, 5⅜ grains Boric Acid, ¾ grain Salicylic Acid."

The essential virtues ascribed to Palpebrine, according to its makers, are its harmlessness and its therapeutic efficiency due, presumably, to its complex composition:

> "Attention is called to the constituents of this formula, each one of which is used by ophthalmologists. Their combination in Palpebrine is such as to blend their action in a very happy manner. Palpebrine acts as an antiseptic, an irritant, an astringent, and a nerve tonic to the mucous membrane of the eye."
>
> "Palpebrine is superior in its action to the remedies now in use. It contains all the constituents of Aqua Conradi . . . But to these are added a number of other agents which will prove it to be of much greater value and give it a broader field for action."

In all external afflictions of the eye the free use of Palpebrine is suggested in such statements as:

> "They [general practitioners] will therefore gladly receive from our hands an efficacious preparation which may be used with perfect safety."
>
> "The name of our preparation—Palpebrine, is derived from the Latin *palpebra,* the eyelid, and is well fitted, as it designates at a glance the sphere of action of Palpebrine."
>
> "With the assistance of Palpebrine the general practitioner can successfully treat all cases of external eye disease ordinarily encountered in his practice."

One of the members of the Council staff of clinical consultants calls attention to the fact that much vitally valuable time might be lost in a case of iritis, for example, which being unrecognized, should be treated with Palpebrine on the strength of the Dios Chemical Company's advertisements. Even more dangerous is the recommendation of Palpebrine for the prevention of ophthalmia in the newborn, especially as this recommendation is coupled with an attempt to discredit the established treatment with silver nitrate solution:

> "The use of severe remedies for this purpose has been discarded by most physicians. . . ."

While it is doubtless true that ophthalmia neonatorum may be averted by other drugs than silver salts, it is utterly unjustifiable to suggest that the established method of treatment by means of silver salt irrigations has been generally discarded.

[Editorial Note.—The four nostrums mentioned above have been grouped together for publication to call attention to one phase of the proprietary business. A fact not mentioned in the Council's report is that these nostrums are manufactured and promoted by a concern that belongs to a type we have often designated "pseudo-chemical" companies. By this is meant companies that are not in the legitimate business of pharmacy or chemistry, but organized to exploit one, two or in some instances half a dozen proprietaries. "Patent medicines" are exploited by this class of "companies." The Dios Chemical Company is not a chemical company, except in name. J. H. Chambers, the founder so far as we can learn, never claimed any special knowledge of chemistry, pharmacy or medicine. The officers at the present time are: J. H. Chambers, president; M. E. Chambers, vice-president; Leslie T. Chambers, treasurer, and Arthur Chambers, secretary. M. E. is the wife of J. H., and Leslie T. and Arthur are sons.

This is simply one illustration of the fact noted above. Some physicians have been and are prescribing nostrums originated, manufactured and advertised by laymen who are not in the legitimate pharmacy business. In addition, such physicians have been accepting the statements of laymen, not only as to the composition of the nostrums, but as to their use. In every state the practice of pharmacy is regulated by law: before assuming the responsibility of compounding medicines a druggist must have studied and passed an examination in pharmacy. Public safety demands and the law requires it. There are some doctors, however, who will allow laymen who are not chemists, pharmacists nor physicians to formulate and compound a prescription and tell them what it is good for and how to use it.

The Dios Chemical Company is not an isolated instance: we have already referred to some; we shall take occasion to refer to others in the future. That such concerns flourish is a reflection not so much on the shrewd laymen who exploit the medical profession—and through it the public—as it is on the physicians who cast their scientific training to the winds and permit themselves to be thus exploited.]

CORRECTION

Quantity of Iodine in Iodotone

In this department of The Journal for Dec. 12, 1914, p. 2149, under the heading "Iodotone" the statement is made: "Iodotone, sold by Eimer and Amend, New York, is stated to be a solution of hydrogen iodid (hydriodic acid) in glycerin and to contain 1 grain of iodin per fluid ounce." This should read—"one grain to each fluid dram."

Correspondence

Military Surgery

To the Editor:—Some statements in Dr. Hoguet's "Observations on Military Surgery in the Early Weeks of the War" (The Journal, Dec. 19, 1914, p. 2194) purporting to represent a contribution based on his experiences in the American hospital at Neuilly-Paris, should not be allowed to remain unchallenged.

Dr. Hoguet has favored us with more than his personal experience, by familiarizing us with frontal organization and transport, but, unfortunately, does not correlate these with his experience in Paris, which city must be looked on as basal as far as medical aid is concerned, thereby failing to allow the uninitiated an insight into the real problems of modern war surgery, for a few operations performed at base hospitals have scarcely anything in common with military surgery in the more restricted sense of the word.

Dr. Hoguet further says, "When a strong bone, such as the humerus or femur, is struck by a bullet within its zone of maximum speed (5,465 yards), one of two things may happen: Either the bone is cleanly perforated—and this is very rare—or else it is completely shattered," and plainly shows that he either is not familiar with ballistics or has made an error in copying from whatever source he obtained his information. The German rifle is sighted up to 2,187 yards, and if even the best German sharpshooter, by elevating his rifle about 45 degrees, were to fire at me at 5,465 yards (over 3 miles!) I would have the choice of stepping out of the way, since it would require over half a minute for the missile to reach the target, if it would reach it at all, or catching the bullet with my bare hand as a souvenir of modern medicomilitary literature.

The fact is that both near and distant shots bring about the so-called "butterfly" fractures with this difference, that the closer the range the smaller the fragments, which, when the live force is near its maximum (there is no such a thing as maximum since the muzzle velocity loses practically after encountering air friction), may amount to extensive comminution. Gunshot wounds are governed by a fixed, immutable law (Newton's) and while the density (air and liquid content) of the tissues may result in pathologic variations from a mere puncture to extensive laceration and destruction, there is but one law governing any and all injuries.

This law, however, has very little to do with the clinical course of an injury, but the military surgeon will be in a position so to apply the laws of bacteriology as not only to explain but to control most infections. One cannot but express wonder at a paragraph in the article under consideration when the author endeavors to seek an explanation why infected compound fractures of the arm heal better than like injuries of the thigh. Dr. Hoguet indulges in speculation about better supply of blood and easier drainage. Any one familiar with the elements of anatomy knows that the thigh can show at least as good a blood supply as the arm, and when it comes to the question of effective drainage, I cannot recall that the mere thickness of a group of muscles ever interfered with the introduction of a drainage tube. If the author had but considered a simple experience on the battlefield, namely, that a soldier hit in the arm can immobilize his limb by pinning his affected sleeve to his tunic and still be about, and thereby retain good vitality, especially during transport, while a combatant sustaining a like injury in the thigh must necessarily remain recumbent and often suffers during transport from ineffective immobilization (oh, for that significant little word "rest" in military surgery!) thereby sustaining additional trauma, if not contact infection, easily resulting in a veritable ideal condition for "life-saving" amputation all speculation would have proved unnecessary.

In this respect at least the experience of the present war in Europe is not likely to bring out anything not already well known to military surgeons.

Gustavus M. Blech, M.D., Chicago.

Bureaus of Information for American Postgraduate Study

To the Editor:—While recently in New York, I noticed the large number of physicians seeking postgraduate work who daily arrived at the various clinics and hospitals and who, being unable to go to Europe, had turned to the home clinics in the United States. No doubt all of our large centers have received their share of these postgraduate students and workers.

It occurred to me that each large city having postgraduate facilities or extensive medical centers might do well to have a centralized and well-organized bureau of information for the benefit of the stranger, where the newly arrived physician might obtain, with the least loss of time, such information as would assist him in locating the particular line of clinical and special instruction desired in the shortest time.

In New York I saw a number of physicians visiting a number of hospitals, clinics and instructors before finding the most adaptable place for their desired studies, and doing this at an enormous expense of time, when one considers that usually the busy physician has short enough time in the postgraduate centers.

I would suggest a get-together movement on the part of the leaders in post-graduate schools to establish a bureau of medical information, either as a part of the medical society or part of the medical committee of the chamber of commerce, and as soon as such is developed, thoroughly advertise the fact to the profession. A small registration fee might be charged the visiting physicians, for which their problems might be taken under advisement and assistance given in the matter of finding appropriate living accommodations within easy access of the clinic or hospital to be attended.

Physicians in New York usually feel that the stranger requires several days before he becomes oriented in the city. I know I would have greatly appreciated such guidance and direction as I herein suggest.

By publishing this letter you may stimulate a movement which I feel would be in accordance with American advance in the systematic upbuilding of our clinical centers, whose value is certainly second to none, even European centers of overcongestion, which are at present inaccessible.

C. O. Jaster, Elyria, Ohio.

Formula for Cleaning Glassware

To the Editor:—I wish to call attention to the fact that I have had great success during the last few months in cleaning stained slides and glassware by using a preparation consisting of equal parts of a 6 per cent. solution of sodium hydroxid and a 2 per cent. solution of calcium carbonate. Boil the slides in this mixture for one minute. The slides are then rinsed in cold water and wiped.

Abe H. Kaplan,
Laboratory Department,
City and County Hospital, St. Paul.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LITERATURE ON DIPHTHERIA ANTITOXIN

To the Editor:—Please give me references to the latest articles on the administration of diphtheria antitoxin. M. F.

Answer.—The following is a list of references on this subject:

Park, W. H.; Zingher, A., and Serota, H. M.: Schick's Reaction and Its Practical Application, *Arch. Pediat.*, July, 1914; abst., The Journal, Aug. 22, 1914, p. 704.

Rolleston, J. D., and MacLeod, C.: Intramuscular Injections of Antitoxin in Diphtheria, *Brit. Jour. Child. Dis.*, July, 1914; abstr., The Journal, Aug. 29, 1914, p. 807.

Woody, S. S.: The Use of Antitoxin in Diphtheria, The Journal, Sept. 5, 1914, p. 861.

The Proper Dosage of Diphtheria Antitoxin, editorial, The Journal, Dec. 12, 1914, p. 2134.

Lund, A., and Uspensky, N.: Dosage of Antitoxin in Diphtheria, *Med. Obozr.*, 1913, lxxix, No. 1; abstr., The Journal, June 7, 1913, p. 1843.

Value of Immunizing Doses of Diphtheria Serum, Query and Minor Notes, The Journal, Jan. 11, 1913, p. 147.

Park, W. H.: Antitoxin Administration, *Boston Med. and Surg. Jour.*, Jan. 16, 1914; abstr., The Journal, Feb. 1, 1913, p. 398.

Reiche, F.: Antitoxin Treatment of Diphtheria, *Med. Klin.*, Jan. 5, 1913.

Schöne, C.: Diphtheria Antitoxin and Proper Dosage, *Deutsch. med. Wchnschr.*, Feb. 20, 1913.

Kraus, R., and Baecher, S.: The Relations Between Antitoxin Content and the Curative Action of Diphtheria Antitoxin, *Deutsch. med. Wchnschr.*, June 5, 1913.

The Presence of Diphtheria Antitoxin in the Blood of Normal Persons, editorial, The Journal, June 6, 1914, p. 1810.

Diphtheria Antitoxin, editorial, The Journal, Sept. 5, 1914, p. 873.

Otto, R.: Diphtheria Antitoxin in Bacilli Carriers, *Deutsch. med. Wchnschr.*, March 12, 1914; abstr., The Journal, April 18, 1914, p. 1291.

Joseph, K.: Danger and Prophylaxis of Anaphylaxis from Diphtheria Antitoxin, *Deutsch. med. Wchnschr.*, March 12, 1914; abstr., The Journal, April 18, 1914, p. 1291.

ETHER DRINKING

To the Editor:—Please give me information concerning the drinking of ether as a habit. A. R. Y.

Answer.—The use of ether as an intoxicant, referred to in a few text-books and some journals, is a rather uncommon practice. Most of the reports relate to observations of this habit in Ireland, where it is limited to restricted well-defined districts and in which it is almost universally practiced. Ether drinking began in these places about the middle of the last century. A certain formality is observed by some drinkers, such as the taking of a mouthful of cold water before and after the drug is swallowed; the ether is taken both diluted and pure. The real habitué, however, scorns the use of water as well as the diluted drug. The quantity taken for one debauch is from 2 drams to 1 pint. Just as in the case of alcoholic drinks, the tolerance to the drug and the amount to produce intoxication vary.

The effects are similar to those of alcohol, but they come on and wear off more rapidly, leaving little or no discomfort; hence the tendency to repeat the intoxication, which is regarded by some as pleasurable, so that there may be as many as half a dozen to twenty periods of ether-drunkenness during twenty-four hours. Quantities of ether as large as 1 liter a day are mentioned by various writers, as being consumed in this way. There is a very interesting report by

Ewald of an "ether breather," a well-educated man who was able to demonstrate and analyze the immediate effects of the drug, on his own mental faculties in particular. Insanity is not directly connected with the habit by those who have observed the consequences of this exceptional form of drunkenness. The effect on health seems to be limited to chronic gastritis and dyspepsia. However, several sudden deaths in the "ether area" of Ireland not otherwise explained have been attributed to ether drinking. Sometimes conditions very similar to those of chronic alcoholism are observed. One peculiar danger alleged to ether drinkers is that of setting themselves on fire, as, for example, in lighting a pipe.

It appears that very little is known by pathologists of the harmful effects on the tissues by chronic ether intoxication. Atrophy and sclerosis of the brain and of the liver, such as occurs in chronic alcoholism, have not been observed. It has been suggested that the detrimental effects will be more evident in the descendants of ether drinkers, the larger contingent of whom, in Ireland at least, is represented by robust men.

REFERENCES

Ewald, C. A.: Ein Aetheratmer, Berl. klin. Wchnschr., 1875, No. 10, p. 133.
Lewin, L.: The Untoward Effects of Drugs, translated by J. J. Mulheron, Detroit, 1883, p. 184.
Hart, E.: An Address on Ether Drinking, Its Prevalence and Results, Brit. Med. Jour., 1890, ii, 885.
Lewin, L.: Lehrbuch der Toxikologie, Vienna and Leipzig, Ed. 2, 1897, p. 180.
Kunkel, A. J.: Handbuch der Toxikologie, Jena, 1899, i, 429.
Hausmann, W.: Die Gewöhnung an Gifte, Ergebn. d. Physiol., 1907, vi, 94.
Calwell, W.: Ether Drinking in Ulster, Brit. Med. Jour., 1910, ii, 387.
Margarot, J., and Blanchard: Ethermanie et éthérisme, Montpellier méd., 1912, xxxv, 545.

ACTION OF HEXAMETHYLENAMIN

To the Editor:—1. In what conditions is hexamethylenamin indicated?

2. (*a*) If it requires a certain percentage of acid to break it up into formaldehyd, are the body fluids in cholecystitis and organic nervous diseases, as herpes zoster, acid? (*b*) If not, has it any therapeutic value in such conditions?

3. Why is it used after all penetrating injuries of the brain and cord and before all operations on them?

Gerald H. J. Pearson, M.D.

Answer.—1. When it is desired to destroy or prevent the multiplication of micro-organisms in the urine.

2. (*a*) No. (*b*) Not so far as known.

3. When used in these conditions, it is on the false assumption that it can be active in tissues which are not acid in reaction. There is no evidence warranting its use in such conditions.

CAMPHORATED OIL IN ABDOMINAL SURGERY

To the Editor:—I should be much obliged for any information on the use of camphorated oil locally in the peritoneal cavity after abdominal interventions.

E. F. Rodriguez, M.D., Sagua la Grande, Cuba.

Answer.—The following articles may be referred to:

Momburg: Injury from Injection of Oil into Peritoneum, *Deutsch. med. Wchnschr.*, March 20, 1913; abstr., The Journal A. M. A., May 3, 1913, p. 1404.

Belcher, A.: Camphorated Oil in Peritonitis, *München. med. Wchnschr.*, June 10, 1913.

Hoehne, O.: Intraperitoneal Application of Camphorated Oil, *München. med. Wchnschr.*, April 16, 1912.

Vignard, A., and Arnaud, L.: Camphorated Oil in Treatment of Peritonitis, *Rev. de chir.*, May, 1912; abstr., The Journal A. M. A., July 6, 1912, p. 72.

Von Seuffert: Intraperitoneal Injection of Oil, *Monatschr. f. Geburtsh. u. Gynäk.*, May, 1912; abstr., The Journal A. M. A., July 6, 1912, p. 76.

REMOVAL OF RUST FROM INSTRUMENTS

To the Editor:—A correspondent asks for a solution to prevent instruments from rusting (The Journal, Jan. 2, 1915, p. 72). If among instruments he includes hypodermic needles, there is nothing more serviceable to prevent rusting and consequent plugging than equal parts of almond oil and alcohol. This may be kept in a covered glass dish or a wide-mouthed bottle, and the needles allowed to remain in the solution when not in use. They may easily be removed with tissue forceps, the oil allowed to drain, and what of it that remains in the caliber of the needles can be cleared out with a jet of alcohol. Solutions containing bacterins and vaccines seem especially prone to produce plugging of needles, and this annoyance can be prevented absolutely and the life of the needle indefinitely prolonged by the use of the almond oil-alcohol mixture.

Bernard Wolff, M.D., Atlanta, Ga.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

California: Sacramento, Jan. 12, 1915. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

Illinois: Chicago, Jan. 13-15, 1915. Sec., Dr. C. St. Clair Drake, Springfield.

Indiana: Indianapolis, Jan. 12-14, 1915. Sec., Dr. W. T. Gott, State House, Indianapolis.

Iowa: Des Moines, Jan. 19-21, 1915. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

Kansas: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lebanon.

New Mexico: Santa Fe, Jan. 11, 1915. Sec., Dr. W. E. Kaser, E. Las Vegas.

New York: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

Oklahoma: Oklahoma City, Jan. 12-14, 1915. Sec., Dr. John W. Duke, Guthrie.

South Dakota: Pierre, Jan. 12, 1915. Sec. Dr. P. B. Jenkins, Waubay.

Vermont: Montpelier, Jan. 11-13, 1915. Sec., Dr. W. Scott Nay, Underhill.

Wisconsin: Madison, Jan. 12-14, 1915. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

Preventive Medicine at the University of California

Following the inauguration of the work of the George Williams Hooper Foundation for Medical Research, for the maintenance of which $50,000 per annum is available, the University of California, Medical School, is contemplating the development of a course in preventive medicine which will lead to the degree of Graduate in Public Health. To secure this degree it is planned that students must have satisfactorily completed one of the three following courses:

(*a*) The four years' course in the college of Letters and Science, beginning with the junior year, two years counting toward the degree of A.B., to be followed by two years of graduate work; or

(*b*) A two years' course in the Graduate School following the receiving of the degree of B.S. by students who have completed the four-year undergraduate curriculum in sanitary engineering; or

(*c*) A course for students in the University of California, Medical School, beginning in the second half of the fourth year (that is, the second graduate year) of the regular curriculum in the Medical School, and continuing for a year and a half to the end of the third graduate year, at which time the degree of M.D. in the Medical School and the degree of Graduate in Public Health in the College of Letters and Science would be conferred.

There are now nine medical colleges which have established graduate courses in public health.

Hospital Intern Year Required

A letter from the dean of Northwestern University Medical School states that at the quarterly meeting of the board of trustees, held recently, the recommendation of the medical school was adopted, that an additional year of hospital work be made part of the medical work for the course for students entering for the session of 1915 and thereafter. This is the fifth medical school to adopt this requirement. The complete list and the sessions when the requirement became effective, or will become effective, are as follows:

	Session of
University of Minnesota Medical School	1910-11
Leland Stanford Jr. University School of Medicine	1914-15
Rush Medical College (University of Chicago)	1914-15
University of Vermont College of Medicine	1915-16
Northwestern University Medical School	1915-16

One state licensing board, that of Pennsylvania, now requires that every candidate to be eligible for a license to practice medicine in that state must have served at least one year as an intern in an approved hospital. The requirement became effective in 1914.

California June Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at Los Angeles, June 16-19, 1914. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 88, of whom 60 passed, including 11 drugless practitioners, and 28 failed, including 16 drugless practitioners. One hundred and nine candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
California Eclectic Medical College	(1914)	75, 76.8, 78.2, 78.9, 82.7.
College of Medical Evangelists	(1914)	78.4, 89
College of Phys. and Surgs., Los Angeles	(1913) (1914)	84.8, 88.2; 75, 75, 76.9, 81.3, 82.7, 82.9, 83.1, 83.2, 83.7, 85, 86, 86, 86.8, 86.9, 87.2, 87.5, 87.8, 89.2, 89.4, 89.4, 90.2, 90.3, 90.4, 90.4, 91.3, 92.
Hahnemann Medical College of the Pacific	(1914)	75.4, 86.7
Leland Stanford Junior University	(1914)	79.1, 80.5
University of California	(1913) (1914)	89.4; 76.9, 87, 87.9, 87.9, 88.
Johns Hopkins University	(1913)	83.3
Harvard University	(1912)	87
Trinity University	(1901)	76.7
Royal University of Parma, Italy	(1900)	89.1

FAILED

College	Year Grad.	Per Cent.
California Eclectic Medical College	(1914)	68.2, 71.9, 72.4.
College of Medical Evangelists	(1914)	73
College of Physicians and Surgeons, Los Angeles	(1914)	72.5
Cooper Medical College	(1903)	73.2
College of Med. and Surg., Physiomedical, Chicago	(1911)	30.9
St. Louis College of Physicians and Surgeons	(1910)	70
Eclectic Medical College, Cincinnati	(1913)	70.9
Medico-Chirurgical College of Philadelphia	(1912)	63.2
Meharry Medical College	(1913)	67.8
Queen's University	(1884)	41.3

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
California Eclectic Medical College	(1913)	Nevada
University of Southern California, Coll. of Med.	(1908)	Nebraska
University of Colorado	(1907)	Colorado
Georgetown University	(1904)	Arizona
George Washington University	(1909)	Illinois
American College of Medicine and Surgery	(1903)	Illinois
Bennett College of Eclectic Medicine and Surgery	(1874)	Illinois
Chicago College of Medicine and Surgery	(1913)	Nebraska
Chicago Homeopathic Medical College	(1899)	Iowa
Chicago Physiomedical Institute	(1886)	Michigan
College of Physicians and Surgeons, Chicago	(1884) (1899) (1901) (1903) (1905) (1906) (1912)	Michigan; Colorado; Iowa; Illinois; Montana; Illinois.
Hahnemann Medical College and Hospital, Chicago	(1901)	Wisconsin
Northwestern University	(1894) (1902) (1904) (1907)	Illinois
Rush Medical College	(1871) (1881) (1883) (1892) (1896) (1904) (1906) (1907) (1908) (1909) (1910) (1913,3)	Illinois; Iowa; Missouri; Wisconsin; Arizona; Colorado; Illinois; Missouri; Illinois.
Indiana University	(1910) (1911)	Indiana
Sioux City College of Medicine	(1902)	Iowa
State University of Iowa College of Medicine	(1892)	New York
Eclectic Medical University, Kansas City, Kan.	(1908)	Kansas
Kansas Medical College	(1903)	Kansas
Kentucky School of Medicine	(1905)	Arizona
Louisville Medical College	(1906)	Texas
Medical School of Maine	(1905)	Maine
Baltimore Medical College	(1909)	Arizona
College of Physicians and Surgeons, Baltimore	(1890) (1904)	Nebraska; Pennsylvania.
Johns Hopkins University	(1904) (1911)	New York; Maryland
University of Maryland	(1903)	Maryland
Detroit College of Medicine	(1893) (1897)	Arkansas; Wisconsin
Detroit Medical College	(1885)	Michigan
University of Michigan, Department of Medicine and Surgery	(1873) (1880) (1896) (1909) (1911) (1912) (1913,2)	Nevada; Iowa; North Dakota; Michigan.
Hamline University	(1905)	Washington
University of Minnesota	(1907,2)	Minnesota, South Dakota.
American Medical College	(1892)	Missouri
Barnes Medical College	(1899) (1907)	Colorado; Oklahoma
Homeopathic Medical College of Missouri	(1869) (1887)	Missouri; Pennsylvania.
Kansas City Medical College	(1897)	Missouri
Missouri Medical College	(1898)	Indiana
St. Louis University	(1908) (1914)	Illinois; Missouri
Washington University	(1908,2)	Missouri
Omaha Medical College	(1892)	Nebraska
University of Nebraska	(1907)	Iowa
Bellevue Hospital Medical College	(1882) (1889)	New York; Indiana
College of Physicians and Surgeons in the City of New York	(1896) (1898)	New Mexico; New York.
Columbia University	(1912)	New York
Cornell University	(1903)	New York
Long Island College Hospital	(1891) (1896)	New Jersey; New York
New York Homeo. Medical Coll. and Flower Hosp.	(1910)	Washington
University of Buffalo	(1874)	Iowa
University of the City of New York	(1887) (1890)	Pennsylvania; Colorado.
Eclectic Medical College, Cincinnati	(1890) (1903)	Kansas; Washington
Medical College of Ohio	(1908)	Ohio
Miami Medical College	(1903)	Illinois
Ohio-Miami Medical College	(1913)	Ohio
Starling-Ohio Medical College	(1910) (1912)	Ohio
Western Reserve University	(1883) (1908)	Montana; Ohio
Hahnemann Medical College and Hosp., Philadelphia	(1880)	Nebraska
Jefferson Medical College	(1879) (1881) (1895) (1904)	Oregon; Pennsylvania; Wyoming; Pennsylvania.
Medico-Chirurgical College of Philadelphia	(1890)	Penna.
Western Pennsylvania Medical College	(1902)	Penna.
Tennessee Medical College	(1908)	Tennessee
McGill University	(1888)	Ontario
Royal University, Christiania	(1906)	Washington

Rhode Island October Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the practical and written examination held at Providence, Oct. 1-2, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 10, of whom 9 passed and 1 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of P. and S., Baltimore	(1914)	93.2
Boston University	(1914)	88
Harvard University	(1908)	86.7
Tufts College Medical School	(1907)	88.4
Medico-Chirurgical College of Philadelphia	(1914)	84.5
University of Vermont	(1914)	84.5, 85.5
Montreal School of Medicine and Surgery	(1912)	80.2
Royal University of Naples	(1891)	86

FAILED

College	Year Grad.	Per Cent.
Meharry Medical College	(1914)	72.5

Book Notices

Diseases of the Skin, Including the Acute Eruptive Fevers. By Frank Crozer Knowles, M.D., Instructor in Dermatology, University of Pennsylvania. Cloth. Price, $4 net. Pp. 546, with 213 illustrations. Philadelphia: Lea & Febiger, 1914.

This book belongs to the manual class of text-books; it is *midway between the quiz-compend and the complete treatise.* A successful manual in dermatology should appeal to a large group of students and practitioners, and demands special skill and judgment in the selection and presentation of the subject-matter. The facts chosen from the vast field of dermatologic knowledge must be adequate without excess, and must be clearly and concisely set forth. The author in this instance has met these requirements in part, but not wholly. His selection of material to be presented is scarcely open to criticism, and good judgment is shown in the relative emphasis given the various subjects. The general scheme of presentation is excellent, and in certain respects original; and conciseness is observed in the discussions. There is present, however, a lack of clearness of statement in so many places as to suggest hasty preparation and careless proofreading. A few examples may be cited. In the first paragraph of the preface appears: "In order to make the book more complete, not only the exanthemata are included, but also the acute eruptive fevers that are constantly or occasionally accompanied by a dermal outbreak." In the text proper: "The exact cause of this affection is unknown, but it is probably of toxemic origin, either due to some intestinal toxin or of a bacterial nature." "Erythema multiforme is distinguished from urticaria by the more lasting character of the lesions, a few hours or minutes in the one and days in the other." "Pellagra is a constitutional disease exhibiting a cutaneous outbreak which is chiefly of the exposed surfaces, gastro-intestinal and nervous symptoms." "Erythema paratrimma is the title employed, now almost obsolete, to signify the resultant erythema from the pressure of the prone position preceding a bedsore." A scar, correctly defined in one place, is given elsewhere as "a new formation of skin which replaces tissue loss." Errors in grammatical and rhetorical construction and in the choice of words, while detracting from the general effect of the whole, may not impair validity of statement and can easily be corrected in a subsequent edition. The author will find very few in agreement with him in his classification of Oriental sore under diseases caused by vegetable organisms (cocci). He is bold also in putting syphilis under the same category (spirilli), considering the prevailing opinion as to the *Treponema pallidum*.

A Medical Dictionary for Nurses, Giving the Definition, Pronunciation and Derivation of Terms Used in Medicine, Together with Supplementary Tables of Weights, Measures, Chemical Symbols, etc., Arranged with Special Reference to Use by Nurses. By Amy E. Pope. Cloth. Price, $1. Pp. 288. New York: G. P. Putnam's Sons, 1914.

In addition to giving the definition, pronunciation and spelling of words, this book gives in many cases a description of the uses of substances and the course of diseases. For example: Under tuberculin, the various tuberculin reactions are described; under typhoid, after the statement that it is an infectious disease due to infection with the *Bacillus typhosus*, the symptoms are given and also the complications. The book also includes a list of abbreviations, a table of chemical symbols, a table of the elements, a classification of the poisons and their antidotes, frequently used prefixes and suffixes, tables of weights and measures, methods of reckoning the amount of drug necessary in making solutions, and a table of average composition of common American food products. There are errors, such as the use of "tubercular" for "tuberculous" and "apnoia" for "apnoea," which should be corrected in future editions.

Diseases of the Rectum and Anus. A Practical Handbook. By P. Lockhart-Mummery, F.R.C.S., Senior Surgeon to St. Mark's Hospital. Cloth. Price, $3 net. Pp. 348, with 102 illustrations. New York: William Wood & Co., 1914.

This is the newest of the many books in the field of proctology. It is a handy little volume divided into twenty-three chapters. Useless discussions are avoided, only such methods of treatment which the author has tested and found worth while are described, and in many instances illustrative cases are cited which add greatly to the value of the book. The medicinal treatment of each disease is discussed thoroughly and given preference over surgery when it should be, although the author is a surgeon of prominence. The many prescriptions given will prove useful to the general practitioner as well as to his patient who is seeking relief from his symptoms while taking other treatment under advisement. Much more might be said in praise of the book, but the points mentioned will suffice to indicate that it may be recommended as being worth while.

California and the Far West. Suggestions for the West-Bound Traveler. By K. E. M. Dumbell. Cloth. Price, 75 cents. Pp. 198. New York: James Pott & Co., 1914.

A better—at least a more descriptive—title for this book would be "Suggestions to Those Who Are Proposing a Trip to the Western Coast and Alaska." It mentions the six main transcontinental routes from the Atlantic to the Pacific coast, and gives brief descriptions of the important places—parks, glaciers, canyons, mountains, rivers, lakes, towns, etc.—that may be taken in on the different routes. The descriptions are not sufficiently full to deserve the designation, but must be regarded as suggestions only. There is a list of the principal hotels with rates, and a small map of the western states. The book will prove helpful to those who are arranging to go to the San Francisco and San Diego expositions, which includes those of our readers who expect to attend the next meeting of the American Medical Association. Its special helpfulness lies in the fact that it gives different points of interest on the various routes.

Periodical Examination and Preventive Medicine.—Preventive medicine in order to be of the greatest service to mankind must insist upon the medical examination of every citizen once or twice a year. It is the only thing which will reach the root of the evil.—Victor C. Vaughan, *Journal Michigan State Medical Society*.

Miscellany

Quarry Accidents in the United States in 1913

Although the number of deaths from accidents in quarries in the United States in 1913 was less by about 14 per cent. than for the year 1912, it is still unnecessarily high and does not compare favorably with the records of foreign countries. According to a recent report of the Bureau of Mines[1] the number of men employed in the quarry industry in 1913 was 106,278 as compared with 113,105 in 1912, but on account of the greater number of days worked in 1913 the record for that year exceeds by 800,000 days' labor the record of the previous year. The total number of men killed in 1913 was 183, a fatality rate of 1.72 per 1,000 as against 1.88 in 1912. In the coal industry among the 747,644 men employed in 1913 the fatality rate was 3.73 per 1,000 men employed, and in the metal mines among 193,088 men it was 3.54 per 1,000. It is to be expected that these rates would be higher than that of the quarries where the work is carried on chiefly or altogether in the open, yet it is interesting to note that the fatalities in the coal mines due to falls of roof, wall rock or coal in 1913 amounted to 45.38 per cent. of all fatalities, and in metal mines to 36.16 per cent., while in the quarries falls of rock or overburden caused 20.76 per cent. of fatalities, a seeming disproportion in consideration of the apparent risk.

It is said that the principal hazards of quarrying appear to be about equally divided with reference to explosives, falls of quarry material, and haulage. Accidents from these three causes are said to represent nearly two-thirds of all deaths. In France the mortality rate from quarry accidents is said to be about 1 per 1,000 men employed. In 1912 it was only 0.91. In Great Britain the average for ten years was about 1.09 per 1,000 men employed, and in 1913 it was only 1.05. The fatality rate in the United States in open quarries, with ample light and air and with no risk of roof falls, is said to be greater than in some of the coal or metal mines in foreign countries. This is attributed to less stringent regulations and less systematic inspection. Although percentages of serious and slight injuries are given, the uncertain method of rating or reporting injuries in the different states or in the quarries makes their exact value doubtful. A uniform method should be adopted, as advocated in the report.

Frontal Sinus Suppuration

Many cases of chronic suppuration of the frontal sinus may be permanently cured by intranasal treatment whereby the anterior and upper portion of the middle turbinate and some adjacent cells are removed. Many other cases, according to Lothrop (*Annals of Surgery*, 1914, lix, 937), will not yield to this treatment. The operations in present use are (1) intranasal and (2) extranasal.

Most authorities agree that the intranasal effort to enlarge the vicinity of the ostium of the sinus is attended with unnecessary risk. In the external operations the facial or orbital wall of the sinus or both are removed, and the more radical, such as the Killian operation, removes also a portion of the nasal process of the superior maxilla and lacrimal bone. These operations strive to obliterate the sinus and there is subsequent disfigurement, varying according to the type of operation.

The establishing and maintaining of adequate drainage is difficult because of the anatomic relations in the vicinity of the ostium. The principle of the Killian operation, Lothrop believes, is wrong because the bony support afforded by the nasal process of the superior maxilla and lacrimal bone is removed and thereby the soft parts are drawn in subsequently and thus the region is narrowed. In the smaller sinuses, provided the patient does not object to the deformity, the result may be satisfactory.

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[1] Quarry Accidents in the United States During the Calendar Year 1913. Technical Paper 92, U. S. Bureau of Mines.

The steps in Lothrop's operation are as follows: A small bony opening is made in the facial wall just above the nasal process; a small probe is passed through the ostium into the nasal cavity and left there while, by means of small curets at the start, and subsequently the use of burr drills, the neighboring anterior ethmoid cells and the nasal process of the frontal bone are removed; then the thickened mass of bone which exists at the region of articulation between the frontal bone above and the nasal bone, and the nasal process of the superior maxilla are so thinned as to leave only a thin shell. "This removal," says Lothrop, "can be accomplished only by means of burr drills introduced through the nose with the burr in sight through the opening in the facial wall." Furthermore, he believes that there is no objection and that it is advisable, even when only one sinus is involved, to break through the interfrontal septum and remove in the same manner the corresponding portion of the floor of that sinus. The removal includes also a portion of the nasal septum for a distance below the interfrontal septum. By this procedure a surprisingly large opening is obtained and an instrument entering either nostril can be passed into either sinus and swept across from one side to the other. The external wound is closed. Thus obstinate fistulas may be cured at once. As after all operations on the frontal sinus, a certain amount of subsequent intranasal treatment is necessary in order to control the growth of granulation tissue.

In cases in which, as a result of previous operations, the bony structures mentioned above have been extensively removed followed by excessive granulation tissue formation causing early obstruction, successful results have been obtained by epidermizing the sinus after the manner described in The Journal, July 25, 1914, p. 352.

Sanitary Survey of State

Surgeon Carroll Fox, U. S. P. H. S., Washington, who has been making a state-wide investigation of health conditions in Minnesota, has made a report which contains the following specific recommendations, looking toward increased efficiency on the part of the State Board of Health:

1. That it be raised to state department.
2. That all its subdivisions be housed in the same building.
3. An assistant director and two additional bacteriologists for the division of preventable diseases.
4. Division of the state into not less than 20 health districts.
5. Each district to have a physician trained in sanitary science, with an office and adequate assistance, including inspectors, nurses and clerks.
6. Such physician to hold office during good behavior, be paid salary and traveling expenses and forbidden to practice medicine or engage in any business to interfere with his official duties.
7. Such official to have full power to enforce laws and regulations within his jurisdiction, and authority over all county, city and town health officials.
8. His powers and duties to include notifications of cases of disease, inspection of dairies, creameries, etc.; schools and schoolchildren; investigation of nuisances; prevention of disease; registration of births and deaths, and other duties incidental.
9. Field organization to be mobile, so that a force can be concentrated in emergency in any part of the state.
10. Division of sanitation to be increased by five men, four of whom shall have had training in sanitary engineering and one of whom shall be an expert in analysis of water and sewage.
11. Division of state into four sanitary engineering districts.
12. Comprehensive regulations relative to water supplies and the disposal of sewage and refuse.
13. Hereafter all plans of public buildings to be submitted to state board of health as to sanitary arrangements, as required by law.
14. Law to require reporting of all marriages and divorces to state board of health.
15. Tabulating machines for division of vital statistics.
16. That the prevention of occupational diseases and the maintenance of sanitation in places employing labor be controlled by state department of health.
17. Resumption of work relative to school hygiene and child welfare.
18. Provision for distribution of free antitoxin where necessary.
19. Monthly bulletin for use in instructing public schoolchildren.
20. State to pay expenses of district health officers attending annual conference.
21. All officials of department to be full time men.
22. System of cost accounting.
23. More clerks and technical assistants.
24. Minimum appropriation of $270,000 for department of health.

Medicolegal

Physician Not Liable for Taking of Wrong Medicine

(Nicholson vs. Patrick (Ky.), 170 S. W. R. 20)

The Court of Appeals of Kentucky affirms a judgment for the defendant, a practicing physician at a mining camp, who not only prescribed, but compounded his medicines, as there was no drug store or pharmacist in the town. The court says that the defendant prepared for a man, who complained of a stomach trouble, a mixture of nux vomica and May apple root. The mixture was of a brown color and put into a 2-ounce bottle on which the defendant testified that he pasted a label with this written direction: "Take 5 drops in water after each meal." He also gave the directions verbally. A few weeks afterward, the man's wife, suffering from some menstrual disorder, consulted the defendant in his office, and he prepared for her a remedy of brown color, which was put into a 3-ounce bottle, but, without placing any label on the bottle, he told her the dose was a teaspoonful as needed. Then, one morning, after about half the contents of each bottle had been used, she poured out of the bottle which she thought contained her medicine a teaspoonful and swallowed it. Almost immediately, she went into convulsions, but had returned to consciousness by the time that the defendant had reached there. He assumed that she was suffering only from her female trouble, and, no doubt, attributed her marked improvement to the efficacy of his medicine, which she informed him she had taken. With her husband he went to his office and sent back some pills. On returning, the husband gave her another teaspoonful of medicine out of the same bottle from which she had taken the first dose an hour before, which all supposed was the bottle prepared for her a month before, because, as he wanted to testify, the defendant told him to give her another dose of her medicine, and, in about fifteen minutes, the pills. But the medicine again threw her into convulsions, and this time the defendant discovered that she had been taking, by the teaspoonful, the nux vomica and May apple root, the bottle not having any label on it. Whether the defendant did or did not place a label on the bottle of poison was the question on which the case was submitted to the jury, and they returned a verdict for the defendant. Nor was it error that the trial court refused to permit the husband to testify. The question in the case, as it was prepared in the lower court, was whether the bottle was labeled in the first place, and none of the testimony offered by the husband could affect that question, except as to what occurred in the defendant's office when he received the bottle, and, as he got that for himself, his evidence about it was clearly incompetent. It did not come within code exception which provides that when a husband or wife is acting as agent for his or her consort, either of them may testify as to any matter connected with such agency.

Manufacturing of Evidence by Physician a Punishable Offense

(Melton vs. Commonwealth (Ky.), 170 S. W. R. 37)

The Court of Appeals of Kentucky reverses a conviction of criminal contempt, but holds that Melton was, under the evidence for the commonwealth, guilty of the common-law offense of obstructing justice, and for this offense he could have been indicted by the grand jury, and on his trial, if proven guilty, under the rules of law and evidence that obtain in criminal practice; the jury could have assessed his punishment at a fine in any amount or imprisonment for any length of time, or have both so fined and imprisoned him. The information filed charged that one Collins having driven an ice wagon which came into collision with an automobile, certain attorneys endeavored to persuade him that he was injured, when he said he was not, and insisted on his submitting to an examination by the accused, who discovered a small bandage worn by Collins as a result of a slight accident sustained the day previous, and, in spite of Collins' explanation, rebandaged him, saying in substance that "they don't know about that"; also subsequently bandaged him again. It further appeared from the record that the accused did not see or prescribe for Collins in a professional way, or give him any advice, or make to him any suggestions about his injury after suit was brought against the owners of the automobile, by the attorneys. According to Collins' version of the affair, the purpose of Melton was to fraudulently make up a state of facts that would enable him to maintain a suit to recover damages for an injury that he had not sustained. That he (Collins) afterward brought a suit to recover damages was not of controlling importance. The offense of Melton was complete when he attempted, by the methods described, to induce Collins to bring a suit. His purpose was to prostitute the administration of the law and make the courts an instrument of fraud and wrongdoing.

Refusal to Submit to Administration of Anesthetic for Examination

(Chicago, Rock Island & Gulf Railway Co. vs. Pemberton (Tex.), 170 S. W. R. 108)

The Court of Civil Appeals of Texas holds that, after the plaintiff Pemberton had refused to submit to the administration of an anesthetic for the purpose of an examination, there was no error in the court refusing to appoint a committee of disinterested medical experts to examine him for the purpose of testifying as to the extent of his injuries and the probable duration thereof. The court says that while the plaintiff was testifying he pulled up his trousers leg, leaving an openwork drawers leg covering his limb. It was not shown that the outer surface of the knee disclosed any mark indicating the extent of injury, nor was its appearance in any way calculated to arouse the sympathy of the jury. It seemed that the only purpose for raising the trousers leg was that the grating sound made by the working of the knee could be more distinctly heard by the jury and others. No restrictions were placed on the examination other than the refusal to appoint a committee. One of the defendant's physicians had examined the plaintiff just before the trial began and testified in the case. Two of the physicians testified that, in order to make a more thorough examination, it would be necessary to place the plaintiff under an anesthetic. The plaintiff refused to submit to the administration of an anesthetic, and that was the main reason for refusing to appoint the medical committee. The plaintiff's refusal was not unreasonable, and there was no error in the court's ruling.

Care Required of Manufacturers of and Dealers in Food

(Parks et al. vs. G. C. Yost Pie Co. et al. (Kan.), 144 Pac. R. 202)

The Supreme Court of Kansas affirms a judgment for $3,000 damages for the death of a man alleged to have been caused by ptomain poisoning from eating a pie, or a portion thereof, which was manufactured by the defendant pie company and sold by it to a retail grocer who in turn sold and delivered it to the man as suitable food for himself and family. The court says that the degree of care required of a manufacturer or dealer in human food for immediate consumption is much greater by reason of the fearful consequences which may result from what would be slight negligence in manufacturing or selling food for animals. In the latter a higher degree of care should be required than in manufacturing or selling ordinary articles of commerce. A manufacturer or dealer who puts human food on the market for sale or for immediate consumption does so on an implied representation that it is wholesome for human consumption. Practically he must know it is fit, or take the consequences if it proves destructive. The usual rule by which the existence or absence of negligence is to be determined in a particular case is whether the care exercised was commensurate with the danger reasonably to be apprehended.

The Value of Partial Knowledge.—What cannot totally be known ought not to be totally neglected, for the knowledge of a part is better than the ignorance of the whole.—Ismail ibn Ali Abu el Feda (Preface to his Geography).

Society Proceedings

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Nov. 23, 1914

(Concluded from page 81)

Some of the Unusual Features of Tuberculous Meningitis

Dr. Thomas McCrae: The case was one of tuberculous meningitis in which symptoms had existed for eight weeks before death. There was a marked variation in the symptoms, the patient's mental condition changing from day to day. The eye symptoms were also very variable, paralysis being present one day and gone the next. Retraction of the head and Kernig's sign were not particularly marked. Lumbar puncture gave a clear fluid with a cell count of 100. Tubercle bacilli were not found. At necropsy only a few tubercles were found on the cerebral meninges, and there was little change in the meninges themselves. It seemed rather difficult at first to give an explanation of the symptoms when the necropsy findings were studied. The brain was hardened as a whole, and when sectioned three caseous areas were found in the occipital lobes. These contained large numbers of tubercle bacilli. In this case many of the symptoms were apparently due to general toxemia and not to the local tuberculous process in the meninges. The variation in the eye signs seemed most probably to be from edema. The lungs showed a large number of very young miliary tubercles, evidently much younger than those in the meninges. The source of infection was apparently a tuberculous epididymitis.

DISCUSSION

Dr. William M. L. Coplin: The lesions in the gray and white matter of the brain of this case were old, with distinct caseation. It is possible that the extension of infection may have occurred from them to the meninges rather than by hemotogenous dissemination to the meninges, lungs and other organs. I am reminded of one case in which there was perfectly clear evidence of at least two eruptions of miliary tuberculosis. These were seen in the liver in the presence of definitely healed tubercles, and perfectly fresh granulations with absolutely no evidence of any reparative effort.

Dr. Joseph Sailer: I recall a case of tuberculous meningitis in which after one or two years the patient died of some other condition and in which healed tuberculous lesions were found in the meninges.

Dr. B. F. Stahl: In a case reported some time ago, the patient had tubercle bacilli in the spinal fluid, had all the symptoms of meningitis and in addition had tuberculosis of the lungs; and, if I remember clearly, he had a cavity. The patient made a surprising recovery from his tuberculous meningitis. I saw the patient four years afterward, and the disease was entirely arrested.

Dr. David Riesman: A woman, stout and healthy looking, presented continuous fever with intense headache. There was history of two separate attacks of typhoid. There was no positive Kernig's sign, but some rigidity of the neck. Lumbar puncture showed the spinal fluid to be almost typical of tuberculosis. Complete recovery took place. I recall the cases of two middle aged women who seemed to have typhoid fever. In the examination of one a little lump was discovered in the back, probably the result of an old Pott's disease. Subsequently all the symptoms of miliary tuberculosis developed and the patient died of that disease. In the second patient the picture was definitely that of typhoid. She had also a little enlargement in the back. This together with the headache suggested tuberculous meningitis, which the condition was subsequently proved to be. I feel, therefore, that these small lesions in the intestines, epididymis and in the joints are not infrequently the cause of a miliary tuberculosis or tuberculous meningitis. I would particularly point out that these little remnants of an old and forgotten Pott's disease are very interesting in diagnosis.

Dr. Robert L. Pitfield: In a case of meningitis, lumbar puncture showed tubercle bacilli, diplococci and pneumococci.

The edema of the face, choked disk and the fact that the complete coma was not relieved by lumbar puncture led me to think that possibly the cause of the comatose condition was a blocking up of the foramen of Monro and the overflow of fluid into the left ventricle. Dr. McCrae's case might be due to an accumulation of fluid as well as to the toxic condition mentioned.

Dr. A. P. Francine: I have seen three cases which developed many of the typical features of meningitis which remained for a definite period, and in which a diagnosis was made of tuberculous meningitis in the course of advanced pulmonary tuberculosis. All three cases cleared up without evidence of tuberculous involvement of the meninges or brain. I therefore look on these cases as possibly of nephritic origin or due to toxemia. I am rather skeptical of a tuberculous meningitis with recovery. I have seen recovery in such so-called cases, but there has been a complete absence of tuberculous meningitis.

Dr. Alfred Stengel: I recall a woman with marked cerebral symptoms who soon developed a paralysis of the external rectus muscle in one eye with marked diplopia. There was retinitis with swelling of the nerve head. There were somnolence and various other nervous disturbances not terminating in coma. The condition had begun with apparently acute infection which we eventually discovered to be tuberculous. While tuberculous meningitis was not demonstrated, its suggestion was very strong and it might possibly have been a case of healed tuberculous meningitis. Another case was one in which there were all the symptoms of tuberculous meningitis in a young boy who had tubercles in the retina. There was complete recovery from the meningeal and retinal conditions. These two cases suggest the possibility of healed tuberculous lesions in the meninges.

I believe with Dr. McCrae that in tuberculous meningitis the symptoms are due, not to the local tuberculous process, but to the associated toxemia and perhaps to the vascular changes as well. Were the cerebral symptoms due to previously established organic lesions, the extraordinary changeability in these symptoms from day to day could hardly take place.

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Dec. 9, 1914

The President, Dr. William Duffield Robinson, in the Chair

SYMPOSIUM ON RETRODISPLACEMENT OF UTERUS

Gilliam Operation for Deviations of Uterus

Dr. D. Tod Gilliam, Columbus, Ohio: My operation is the pioneer ventrosuspension of the uterus by means of the round ligaments *in which the ligaments are left intact in their natural investments.* The many modifications of the original operation emphasize the value of its principle. The following is a description of the operation as I do it to-day: 1. An abdominal incision 3 or 4 inches in length is made in the median line at the usual site between the umbilicus and pubes. 2. The adhesions are broken up and the fundus brought forward. 3. By lifting up the broad ligament of one side on the tip of a finger applied to the posterior surface, the round ligament is brought into view and is picked up by a bullet forceps. 4. Selecting a point 1½ inches from the uterus, a thread is passed under the round ligament and the ends of the thread are brought out of the opening and secured in the bite of a clamp forceps which is laid on the surface of the abdomen. 5. The other ligament is sought for and secured in the same manner. 6. At a point about 1½ inches above the pubes, the peritoneum, muscle and fascia are caught up by a volsella and pinned together, care being taken that the edges of these layers are approximately in line. 7. Traction is now made, and with a claw retractor the skin and superficial fat are drawn in the opposite direction, and by a sweep of the knife the face of the fascia is laid bare. 8. With a Cleveland ligature carrier or some similiar instrument a stab wound is made from the surface of the fascia into the peritoneal cavity, 1 inch from the edge of the abdominal incision. The jaws are separated and by an outward movement of the handle brought into plain view at the large opening. The thread which loops the round ligament is now placed in the jaws, the clamp forceps removed and the ligature carrier withdrawn, bringing with it the thread and the ligament. 9. While the ligament is held taut, with its loop end just above the surface of the fascia, a catgut suture is passed through it, including the tissues on either side, then back again where it is tied. This is cut close to the knot, and the suspending thread removed, perferably by clipping it close to where it passes under the ligament, to avoid possible contamination. 10. The volsella and retractor being removed, the other side is dealt with in like manner and the incision closed.

After both ligaments have been fastened, the conditions are such that strangulation of the bowel is scarcely conceivable. The uterus rests easily and naturally on the bladder, from which it can be raised to a position a little short of vertical. So far as I know there has not been a single instance in which pregnancy or parturition has been embarrassed, and there have been no untoward results of any kind. In a few isolated cases in which it was averred that intestinal obstruction occurred, the condition should not be credited to the operation per se. The majority of the failures have been due to insecure attachment to the abdominal walls.

Operative Treatment of Retroversion of Uterus

Dr. Edwin B. Cragin, New York: In June, 1905, I turned to the principle of the Gilliam operation of shortening the round ligament. After performing two or three of these operations through a median incision, I adopted the Pfannenstiel incision because, among other reasons, of its simplicity of technic, the safety of the cicatrix and the cosmetic result. Because of an unsatisfactory anatomic result in one case, I have been careful since November, 1905, to perform the operation so that the loop of round ligament when sutured lies just beneath the fascia and does not perforate it. Since then I have had no further trouble with sloughing of the ligament. Any operation for retroversion of the uterus, to be called satisfactory, must be (1) safe, (2) permanent in its results, and, (3) must not interfere with pregnancy, parturition or the puerperium. Of 400 operations during the nine years ending last June, I lost one. This was a complicated case in which nothing but an intra-abdominal operation would have met the indications. In the series of 400 operations, there were 127 complicated cases.

Regarding permanence in results, in 164 cases heard from in the series of 400, and calling a uterus which lies in the axis of the vagina a partial anatomic failure, I have two partial anatomic failures, two complete anatomic failures, and two symptomatic failures, although anatomic successes. Among these 164 cases, pregnancy has occurred in 35, and without marked discomfort. Of the 35 women who became pregnant after the operation, 22 went to term and bore a living child; 1 has had two living children since the operation; 9 are now in the course of pregnancy, and 4 have had miscarriages induced or natural. Of these 4, 1 has had seven induced abortions since my operation; 1 has had two. One miscarried after a fall, and one had a miscarriage without assignable cause, but she had one living child before this miscarriage and since my operation, and is now advanced about four months in her third pregnancy. This gives one miscarriage after and one miscarriage without assignable cause in thirty-eight pregnancies, which does not seem a greater frequency than one would expect in women not operated on. One of these women became pregnant at once after leaving the hospital; another menstruated only once before becoming pregnant. In none of the patients who went to term have I been able to get any history of dystocia. The involution of the uterus has been normal. The absence of hernia in any of the cases heard from suggests that leaving the opening in the rectus just large enough for the round ligament loop makes the occurrence of hernia very improbable.

Surgical Treatment of Retroversion of Uterus with Special Reference to the Lower Pole

DR. J. WESLEY BOVÉE, Washington, D. C.: To select the proper corrective operation intelligently, an understanding of the forces maintaining the uterus in what may be called its normal position is essential. It hardly seems proper to rely entirely on shortening the round ligaments to correct retroversion of the uterus. I believe success will attend this procedure only when a strong ligament exists or is strengthened by plication and markedly shortening it. My views regarding operations for retroversion of the uterus are, briefly, as follows: 1. Round ligament shortening, per se, does not usually contain all required elements in the treatment of retroversion of the uterus, though it may end the displacement. 2. No single operation devised is more successful than is it. 3. The displacement is more certainly influenced by the ligamentation at the lower pole than by other forces, and, therefore, the proper adjustment of these forces is of paramount importance. 4. Without predilection for any particular operation, the exact cause or causes of the displacement must be sought and the indicated operation performed. 5. The vaginal route alone is not applicable, except in the roomy vagina of the multipara, or when the operation is limited to the anterior vaginal wall and broad ligament bases. 6. The round ligament shortening is often advisable as an adjunct to operation on the ligaments at the lower pole of the uterus.

Operative Treatment of Retrodisplacements of Uterus

DR. E. E. MONTGOMERY, Philadelphia: Modifying the Gilliam operation, a loop of round ligament has a ligature passed around it, the ends of which are threaded into a Deschamps needle. The ligament is seized with hemostats external to the point about which the ligature is thrown around it, an opening is made in the anterior surface of the broad ligament, and through this opening the needle carrying the suture is passed until it reaches the point where the peritoneum is reflected on to the anterior abdominal wall. Hugging the peritoneum, it is pushed through and brought out on the aponeurosis, unthreaded, and the ends of the loop secured with hemostats. A similar course is followed on the other ligaments. Holding the ends of the ligature tense, a pair of sharp pointed scissors closed are inserted along the ligature, slightly separated, when traction generally results in pulling the loop through. The fatty tissue is pushed back, exposing the aponeurosis of this loop, secured by chromic catgut sutures on either side, taking up the approximal and distal ends of the loop. I first performed this operation June 11, 1904, and have had in all 756 cases. In nearly all of these cases this operation has been a link in a chain of operations designed to correct various pathologic conditions associated with displacement. The principal operations in their order of frequency have been curettement, 632; appendectomy, 507; perineorrhaphy, 239; trachelorrhaphy, 175; amputation of cervix, 104; resection of ovary, 58, and anterior colporrhaphy, 56. I have had five deaths, all of which occurred prior to 1909. The last 400 cases have been without mortality.

The advantages of the operation are: 1. It is easily accomplished. 2. It leaves no injured surfaces to favor adhesions. 3. It affords support by structures capable of evolution and involution, and consequently, well calculated to stand the test of subsequent gestation.

Principles and Practice in the Surgical Treatment of Retrodisplacements of the Uterus

DR. J. CLARENCE WEBSTER, Chicago: I have endeavored to carry out certain principles: 1. The operation should restore the soft parts of the pelvis as nearly as possible to normal. 2. In the child-bearing period the operation should not introduce any factor which interferes with the safety of pregnancy and labor. 3. It should also be of such a character as to make it possible for the woman to bear children with the reasonable hope that there shall be no recurrence of the displacement. 4. The operation must be carried out so as to make thorough exploration of the pelvic cavity possible, so that all associated pathologic conditions may be dealt with. The technic employed must not cause such trauma as will give rise to after-trouble.

The anatomic relations of the uterus should constantly be borne in mind. I have long since abandoned all operative procedures carried out through a vaginal incision, such as shortening of the round or uterosacral ligaments, or vaginal or vesical fixation; also all procedures carried out by the abdominal route resulting in the slinging of the uterus from the abdominal wall by an artificial band, or in the pulling of the fundus toward the parietes by the shortening of the round ligaments. A damaged pelvic floor must always be repaired. This is the largest contributing factor to success. The abdomen should be opened by the suprapubic mesial incision, when the procedure is determined by existing conditions. In a typical uncomplicated case, I first carry out what is termed "shortening of the uterosacral ligaments," but what is really the making of new ligaments out of the peritoneum and subjacent tissue. I always use linen sutures in making these ligaments, to ensure development of fibrous tissue.

I then cause the fundus of the uterus to be directed forward to the pubes in its normal position, by shortening the round ligaments and stitching them securely to the upper part of the posterior surface of the uterus. The broad ligament is perforated with a curved forceps immediately under the utero-ovarian ligament close to the uterus. Emerging just above or behind the round ligament an inch or more (according to the length of the stretched ligament) from its uterine end, the forceps grasps the ligament and pulls it through the opening, doubling it on the back of the uterus. This bent portion is spread out as widely as possible, the smooth peritoneal surface being uppermost (superficial). The under surface is then stitched to the uterus with linen suture. The latter is completely buried under the ligament, the edges of which are stitched to the uterus with catgut. The other round ligament is then similarly dealt with.

The next stage is important—the closing of the openings in the broad ligaments, stitching their edges to the round ligaments. When the uterus is large, the level of the utero-ovarian ligament abnormally low, or the outer ends of the round ligaments much thinned, I stitch the round ligaments with linen to the edge of the uterus immediately in front of and above the opening made in the broad ligament. When the operation is accompanied by the removal of a tube or tube and ovary on one side, the round ligament is shortened on this side by doubling it back directly without perforating the broad ligament, care being taken to cover all raw surfaces. In bilateral removal this is done on both sides. In the after-care, all forms of strain on the stitched parts must be avoided for several months. Pregnancy should not be allowed to commence until a year has elapsed, and then it is advisable that a vaginal pessary should be worn during the first three months. After the eighth week of the puerperium it is a wise precaution to use a Hodge or Albert Smith pessary for several months.

Modification of the Alexander Operation

DR. BARTON COOKE HIRST, Philadelphia: I still believe in the treatment of retroversion of the uterus. When a woman comes to me with the train of symptoms attending this condition, and I cure her retroflexion, at the same time giving her symptomatic relief, I feel that I have done her some good. Only within the last two years, however, have I felt satisfied with my operative method. I submit that the ideal operation for retroversion of the uterus is (1) one that will restore the uterus to its natural position; (2) give the patient symptomatic relief; (3) withstand the strain of subsequent pregnancies; (4) does not complicate subsequent pregnancies or labor; (5) and causes no subsequent complications such as obstruction of the bowels. Conditions one and two are met by shortening of the round ligaments. Regarding the third requirement, in over twenty years' experience, the Alexander operation has given the smallest number of recurrences; and, what is particularly important, among the few failures, not one, to my knowledge, has followed subsequent child-bearing. In one case there were five childbirths; in another case four, and not one patient has yet reported complications. The Pfannenstiel operation also obviates the defect of overlooking intra-abdominal complications. The detailed technic of the operation is best described by reference to a series of illustrations. The withdrawal of the round ligament for a sufficient length is a point on which many surgeons go astray. A single stitch of No. 3 catgut is used temporarily to suspend the uterus and to take the strain off the round ligaments. Incision of the peritoneum exposes to view the abdominal organs. The uterus is seized by a Summers' clamp, which is a convenient instrument. Closure of the peritoneal incision occupies only a few minutes. Then the round ligaments are fastened by a series of sutures to Poupart's ligament. The fascia is united and the skin is closed as in an ordinary abdominal section.

Discussion on Retrodisplacement of Uterus

Dr. J. M. Baldy, Philadelphia: The details of the operation bearing my name have been given in the main in the paper by Dr. Webster. As a matter of historic interest, great injustice has been done Andrews of Chicago, who did practically this operation a year prior to the work of Dr. Webster and myself. If retrodisplacement causes the symptoms for which we operate, then any operation that will replace the uterus will cure those symptoms. The trouble is that too much prominence is given to retrodisplacements, and patients are operated on who ought never to be touched for retrodisplacement. Instead of bothering ourselves about what each one is doing perfectly, we should replace the uterus, if that is causing symptoms, and keep it replaced by any satisfactory method that will cure the symptoms. As a matter of fact, in nine out of ten cases the symptoms do not come from it at all. It is the complications that are causing the symptoms.

Dr. Howard A. Kelly, Baltimore: The history of retrodisplacements of the uterus may be divided into four periods:

1. The Ancients down to about the year 1600. Prolapse was recognized, but otherwise little was known of displacements which were confused with wanderings of the uterus into various other parts of the body and various imaginary conditions, such as dryness, softness, distortion and compression.

2. From 1600 to about 1810. During these years there was an increasingly clear recognition of the extreme danger of retroflexion of the pregnant uterus. William Hunter, in 1774, reports a case treated by emptying the bladder, putting the patient in the knee-chest posture, and endeavoring to replace the uterus by using the fingers of one hand in the rectum, pushing in the sac, and those of the other hand in the vagina manipulating the cervix. The patient died and a post-mortem showed that the womb was so tightly wedged in the pelvis that the symphysis had to be divided to get it out. During this period the method of examination was the introduction of a finger into the vagina, technically called the "touch." Retroflexion apart from pregnancy had to be defined as "retroflexion in vacuity." The first case reported in this country was by Dr. Holyoke of Salem, Mass., in 1806.

3. From 1810 to 1885. It now became increasingly evident that retrodisplacements were common. Sir James Y. Simpson almost felt as if he had discovered them with his uterine sound. A number of works in this period were devoted to the subject, among which I would mention especially that of Laroux, published in 1844. This may be called the pessary period of gynecology, when great reputations were made by the invention of a new pessary, and when pessaries were patented and even hawked from door to door.

4. The last, or operative period. This began in the eighties of the last century, when the profession finally broke away from the dominion of the pessary and brought retroflexion operations into the category of other gynecologic procedures which were rapidly becoming almost exclusively surgical. Since that date the pessary has occupied a very subordinate place.

As to the frequency of retroflexions, at the Johns Hopkins Hospital out of 13,600 gynecologic cases, there were 1,886 of retroflexion. Of these, 415 were uncomplicated. Of 1,000 operations of all kinds performed there between Aug. 27, 1904, and Nov. 9, 1905, there were ninety-five cases of retroflexion. My own operation, which was done in 1885 and published January, 1887 (*Am. Jour. Obst.*, xx, 33), I have abandoned after doing it between 700 and 800 times; on account of the occasional accidents or a difficult birth. I now use an operation by which a single silk or linen thread on either side encircles the round ligament and draws it forward to the abdominal wall, where these are tied to the deep fascia over the rectus muscles. The peritoneum between the abdominal wall and the ligament must be picked up at every half inch, in order not to leave a hole for the bowel to slip through. I have done this eighty times and believe it will prove to be the most satisfactory operation yet devised.

Dr. John G. Clark, Philadelphia: The point made by several of the speakers, that the retrodisplacement many times causes no symptoms, is one of the strongest arguments for any operation that gives a liberal insight into the abdominal cavity, so that all complicating conditions may be corrected.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

December, LXX, No. 6, pp. 865-1083

1 New "Efficiency" Systems and Their Bearing on Gynecologic Diagnosis. R. L. Dickinson, Brooklyn.
2 Freiburg Method of Dämmerschlaf or Twilight Sleep. W. H. W. Knipe, New York.
3 *Specificity of Placental Proteins in Skin Reactions of Human Body. F. H. Falls and F. K. Bartlett, Chicago.
4 *Experiments on Etiology of Eclampsia. E. T. Hull and G. L. Rohdenburg, New York.
5 *Resection of Ovaries. A. Goldspohn, Chicago.
6 *Repair and Reconstruction of Bile Ducts. J. H. Jacobson, Toledo, O.
7 Case of Pyloric Stenosis in an Infant Operated on by Method of Dr. John W. Keefe. C. L. Bonifield, Cincinnati.
8 Abdominal Drainage. J. W. Keefe, Providence, R. I.
9 Treatment of Urinary Calculi as Based on Their Chemical Composition. C. B. Schildecker, Pittsburgh.
10 Bacteriologic Findings in Urine in Cases of Kidney Ptosis. D. Hadden, Oakland, Cal.
11 Appendicitis as Cause of Cecal Stasis. H. O. Pantzer, Indianapolis.
12 *Plastic Operation for Correction of Ceco-colon Stasis. E. Marvel, Atlantic City, N. J.
13 *Longitudinal Inversion of Colon; Step in Short-Circuiting Operation. R. T. Morris, New York.

3. **Placental Proteins in Skin Reactions.**—Falls and Bartlett found that proteins prepared from the placenta in this way, or whole placenta when introduced by the von Pirquet intracutaneous or subcutaneous method, do in most cases cause a local reaction in pregnant and non-pregnant individuals. The difference in the reaction, however, is neither great nor constant enough to be of value in the diagnosis of pregnancy. This the authors claim speaks against the theory that the pregnant woman is specifically sensitized to placental proteins. The lack of a general anaphylactic reaction also speaks against the view that the pregnant woman is in fact a sensitized woman.

4. **Experiments on Etiology of Eclampsia.**—Hull and Rohdenburg are of the opinion that eclampsia develops in the following sequence: An overload of fetal elements is thrown into the circulation and, whether in the circulation or not, is autolyzed with the formation of an excess of leucin. The excess of leucin injures the hepatic vessels with consequent thrombosis, cloudy swelling, local necrosis, and more or less complete autolysis of the liver cells. The renal changes are probably due in part to other products of autolysis, and, perhaps, also the protein fractions incompletely broken down by the liver. The surprising feature of the process is the extent to which the liver may be damaged experimentally before clinical symptoms appear in the animals. Judging from analogy, such may well be the case in the human subject. The hemorrhages and the convulsions

Hull and Rohdenburg believe to be due not to extensive hepatic changes, but to the renal lesions. It appears from Hull and Rohdenburg's experiments that albuminuria is an important sign, since severe renal degeneration seems to be the important lesion. The urines of the experimental animals contained enormous quantities of albumin and all varieties of casts, even though there were but slight gross and microscopic changes in some of the kidneys. The experiments further suggest that a negative protective ferment in a known pregnant female and a determination of the leucin content of the blood will prove to be diagnostic procedures of value. The authors suggest that it is possible that a negative reaction so frequently noted in eclampsia, both in man and animals, is due to the inhibition of the activity of the ferments by an excess of their own products.

5. Abstracted in THE JOURNAL, Oct. 17, 1914, p. 1418.

6. Abstracted in THE JOURNAL, Oct. 10, 1914, p. 1320.

12. **Plastic Operation for Correction of Ceco-Colon Stasis.** The operation devised and employed successfully in three cases by Marvel aims to elevate the cecum and reduce the retention capacity of the ascending colon. It restricts the caliber of the colon and eliminates the cecal pouch. This is accomplished by approximating two of the three longitudinal fibrous bands which enter into the formation of the colon wall in such manner as to invaginate that part of the bowel lying between. The appendix having been removed and the stump invaginated and covered, the most dependent point in the anterior fibrous band is caught by a Lembert suture of non-absorbable thread, which suture is carried sufficiently high for its attachment in the external band that when tightened the bottom of the cecum is brought to a level with the ileocecal juncture. Sufficient interrupted Lembert sutures are then placed to completely approximate these two bands in line of their course from their origin at the base of the appendix to the site of the first suture. Additional sutures of the same type are placed above the first suture to the point in which the caliber of the colon ceases to be dilated or to the hepatic flexure. A continuous suture is then placed bringing the serosa over the interrupted suture, thereby reinforcing the approximation by an additional line of union.

13. **Longitudinal Inversion of Colon.**—In redundant sigmoid cases after making anastomosis for short-circuiting, instead of cutting out superfluous sigmoid, Morris attempted to lessen the degree of traumatism by painting this bowel longitudinally with iodin, and then running a suture in such a way that when it was drawn it would bury the painted part longitudinally. This transformed the redundant part into a narrow "rope," and dependence was placed on the iodin for causing strong adhesion. The idea is to do away with the severity of the operation of colectomy.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

December, II, No. 6, pp. 357-427

14 Human Filariasis (F. Loa Guyot and F. Bancrofti Cobbold). A. J. Smith and D. Rivas, Philadelphia.
15 Analysis of Thirty-Seven Fatal Cases in which Pellagra Existed Alone or in Association with Other Diseases. H. C. Clark, Ancon, C. Z.

Boston Medical and Surgical Journal

December 17, CLXXI, No. 25, pp. 915-954

16 Significance and Effect of Pain. J. M. T. Finney, Baltimore.
17 Community Health. G. M. Katsainos, Boston.
18 Critical Defervescence in Typhoid. E. J. Wood, Wilmington, N. C.
19 *Present Status of Crotalin in Treatment of Epilepsy. D. A. Thom, Palmer.

19. **Present Status of Crotalin in Treatment of Epilepsy.**—After selecting 203 cases free from any clinical evidence of organic brain lesions, Thom began to study the coagulability of the blood in epileptics. Blood was taken for this purpose before, during and after convulsions; 92 per cent. of these cases fell within normal limits, 5.5 per cent. was less than the minimum limit, and 2.5 per cent. over the maximum limit. Thom became convinced there was no relation between the coagulation time of the blood and convulsions in epileptics. Fourteen cases of idiopathic epilepsy were started on crotalin with the intention of continuing for three months. On three of these patients it was necessary to suspend treatment; in the first case because of the development of hysteric attacks; in the second the convulsions were so markedly increased in frequency and severity that at the patient's request treatment ceased; the third case exhibited such violent local and systemic reactions that Thom did not feel justified in continuing the injections. Of the remaining eleven cases which were kept on treatment for the three months, six became worse, that is, the convulsions were either increased in frequency and severity or some unusual mental disturbance made itself manifest; four showed no change whatsoever; and one, a typical case of hysteroepilepsy, showed improvement, undoubtedly the psychologic effect of the administration rather than the drug being the cause. From Pennsylvania, Virginia and Michigan, with his own personal work, Thom gathered fifty-eight cases. Six, or less than 10 per cent., showed improvement; twenty, or more than 35 per cent., became worse, and three died while treatment was being carried out. The remaining twenty-nine cases were apparently unaffected by the drug.

Bulletin of the American Academy of Medicine, Easton, Pa.

December, XV, No. 6, pp. 313-388

20 Hygiene and Machinery Hazards. C. T. Graham-Rogers, New York.
21 Measuring Cost of Child Labor. A. J. McKelway, Washington, D. C., and O. R. Lovejoy, New York.
22 Causes of Morbidity and Mortality in Industrial Parturient Woman and Measures for Improvement. E. E. Montgomery, Philadelphia.
23 Fatigue as an Element of Menace to Health in Industries. L. D. Bulkley, New York.
24 Light in Industries. E. Jackson, Denver.
25 Heat and Ventilation. J. Roach, Trenton, N. J.
26 Crowding in Relation to Health of Working People. C. R. Henderson, Chicago.

Canadian Medical Association Journal, Toronto

December, IV, No. 12, pp. 1045-1140

27 Selection of Anesthetics Sequences and Methods. F. W. Nagle, Montreal.
28 Chloroform Anesthesia. J. Stewart, Halifax.
29 Roentgen Ray Evidences of Gastric Carcinoma. J. T. Case, Battle Creek, Mich.
30 *Complement Fixation Test in Gonorrhea. J. J. Ower, Montreal.
31 *Injuries of Foot: With New Method of Reducing Dislocation of Big Toe. M. Chisholm, Halifax.
32 Prenatal Care of Obstetric Cases. J. R. Torbert, Boston.
33 Tuberculosis of Spleen. J. Halpenny, Winnipeg.

30. **Complement-Fixation Test in Gonorrhea.**—Tests were made by Ower on 375 human sera, in 218 of which the presence of a gonorrheal infection was known or suspected. Six strains of gonococcus were used in the polyvalent antigen. The results were as follows: Acute urethritis with symptoms present for ten days or less, and with gonococci in smears, 21 cases, all negative. Acute urethritis of three to six weeks' duration, 17 cases, 9 weakly positive, 8 negative. Chronic urethritis of over six weeks' duration, 22 cases, 13 positive, 9 negative. Epididymitis: (a) 19 cases with definite history of urethritis; 15 positive, 4 negative. (b) Four cases with no history of urethritis, all negative. Two were operated on later and found to be tuberculosis. One gave a positive Wassermann reaction.

Prostatovesiculitis, 40 cases, the majority of which were chronic and resisting treatment; 22 positive, 18 negative. Arthritis: (a) Acute, with no history of urethritis and clinically of type of acute rheumatic fever; 10 cases, all negative. (b) Acute with history of recent urethritis; 8 cases, all positive. (c) Chronic: Eight cases (female), clinically gonorrheal arthritis; 6 positive, 2 negative. Eleven cases, with no definite history or indication of gonorrhea; 3 positive, 8 negative. Colliculitis; diagnosed by urethroscopic examination; 7 cases, all negative. Stricture: 3 cases, all negative. These cases had not had symptoms of gonorrhea for over ten years previously. Conjunctivitis: 1 case of acute conjunctivitis of the right eye showing gonococci in smears, gave a positive reaction. Salpingitis; 23 cases, showing symptoms of acute or chronic inflammation of the fallopian tubes; 14 positive, 9 negative. Of these negative cases, 4 at operation were found to be tuberculous; 1 showed both tubercle bacilli and gonococci in smear, and a culture of the latter was obtained.

In addition to the above, serums were examined from eight cases in which gonococcus vaccine had been administered. These all gave positive reactions. In 130 serums the tests were performed, using both a monovalent and a hexavalent antigen. The latter was found to give on the whole distinctly better results. With it four cases were positive which were negative with the monovalent antigen. In those serums in which both antigens gave positive reactions, the hexavalent gave almost without exception the stronger reaction. An analysis of the cases seems to show that the best results are obtained in cases in which the lesions occupy sites in which there is possibly a lack of free drainage.

31. **New Method of Reducing Dislocation of Big Toe.**—Chisholm's method is to cut the extensor of the toe, then to hyperflex it, and pull it while in this position. In this maneuver the first phalanx acts as a pry with the head of the metacarpal bone as a fulcrum. The pry disengages the heads of the flexor brevis pollicis, the abductor and adductor pollicis, the long flexor tendon and the capsule. When this is done a slight pull in the hyperflexed position and direction makes the phalanx slip into position over the head of the metacarpal bone, carrying all the displaced structures with it. Suture the divided tendon and close the flap raised in exposing it.

Colorado Medicine, Denver

December, XI, No. 12, pp. 445-480

34 Fish and Shell-Fish Poisoning. C. B. Van Zant, Denver.
35 Meta or Parasyphilis. G. A. Moleen, Denver.
36 Management of Simple Fractures. L. M. Van Meter, Denver.

Illinois Medical Journal, Chicago

December, XXVI, No. 6, pp. 567-636

37 Alcohol in Medical Practice. W. C. Bouton, Waukegan.
38 Typhoid Vaccination. E. C. Pratt, Kankakee.
39 Possible Functions of Municipal Laboratories. E. Bartow, Urbana.
40 Certified Milk. R. R. Ferguson, Chicago.
41 Milk Problem. M. W. Snell, Litchfield.
42 Cystoscopic and Microscopic Diagnosis of Genito-Urinary Diseases. W. Wilhelmj, East St. Louis.
43 Leukocytes and Antitoxins. W. A. Wiseman, Camargo.
44 Kidney Infections. J. C. R. Wettstein, Effingham.
45 Acute Ulcerative Colitis. H. A. Haskell, Jacksonville.
46 Abortion, Cause, Prophylaxis and Treatment. J. M. Mitchell, Oblong.
47 Newer Methods of Diagnosis and Treatment of Gastro-Intestinal Diseases—Large and Small Intestines. F. J. Lesemann, Chicago.

Indiana State Medical Association Journal, Fort Wayne

December, VII, No. 12, pp. 551-608

48 Teaching of Neurology and Psychiatry in Indiana. A. E. Sterne, Indianapolis.
49 Lymphosarcoma and Kindred Diseases. Report of Case. P. H. Linthicum, Evansville.
50 Ether, Its Inflammability and Explodability; Its Administration and Its Effects on Lungs and Kidneys. L. F. Schmauss, Alexandria.
51 Practical Considerations of Modern Ideas in Oto-Laryngology. J. D. Heitger, Bedford.
52 *Diagnosis and Surgical Treatment of Goiter. G. Link, Indianapolis.

52. **Diagnosis and Surgical Treatment of Goiter.**—Link's experience in thyroid surgery covers twenty-seven operations done on twenty-one patients. These patients all suffered from thyrotoxicosis except two. Of these twenty-seven operations, one patient died following the operation, a thyroidectomy. There were eighteen thyroidectomies with one death; the other seventeen are living. Two patients on whom ligations had been done merely to alleviate their condition, died; one a year later, one six months later. Both of these were recognized as incurable on account of the extent of cardiac disability, and thyroidectomy was never attempted. Ligation in each case gave relief and benefit, justifying the work. All patients report marked improvement and most of the patients consider themselves cured. One patient who submitted to double polar ligation (March, 1911) now has a normal pulse, and thinks herself well. The technic employed was that used in the Mayo clinic, with modifications suggested by Wathen. Ether anesthesia has been used in most of the thyroidectomies, gas-oxygen in four cases satisfactorily, and local anesthesia once. The method of performing the operation without the patient's knowledge has been used twice.

Iowa State Medical Society Journal, Washington

December, IV, No. 6, pp. 413-496

53 Physician's Relation to Public Health, Report on Diphtheria Epidemic. J. E. Luckey, Vinton.
54 Significance of Laryngeal Manifestations During Course of Pulmonary Tuberculosis Based on Study of Six Hundred and Fifty Cases. R. Levy, Denver.
55 Tonsils and Adenoids, in Their Relation to General Systemic Infections. H. B. Gratiot, Dubuque.
56 Sinus Infections. W. W. Pearson, Des Moines.
57 Goiter. G. Kessel, Cresco.
58 Carbon Monoxid Poisoning. Report of Two Cases. M. J. Fitzpatrick, Mason City.
59 Foreign Bodies in Stomach. B. F. Denney, Britt.

Journal of Parasitology, Urbana

December, I, No. 2, pp. 55-106

60 *Tick Paralysis. J. L. Todd, Montreal, Canada.
61 Larval Trematodes from North American Fresh-Water Snails, W. W. Cort, Chicago.
62 *New Varieties and Species of Malaria Plasmodia. C. F. Craig, U. S. Army.
63 Poison Glands of Larva of Brown-Tail Moth. C. F. Kephart.
64 Killing Small Arthropods with Legs Extended. R. A. Cooley, Bozeman, Mont.

60. **Tick Paralysis.**—Previous publications have proved: (a) That a paralysis in children may be associated with the bites of ticks in western North America and Australia. (b) That a paralysis of sheep has been associated with the bites of ticks in British Columbia and in South Africa. (c) That the ticks associated with these affections are of more than one sort. (d) The *Dermacentor venustus* has produced paralysis in lambs and in a puppy in experiments made under laboratory conditions. (e) That the paralysis following tick-bite is probably an individual and novel condition. The paralysis of children is not infrequently accompanied by elevation of temperature and by other constitutional symptoms; it is possible that symptoms resembling those observed in children sometimes may appear in adults who have been bitten by ticks.

Todd found that under experimental conditions by no means every tick-bite produces paralysis in laboratory animals and that a weak extract of ticks will not cause paralysis when injected into white rats, even though it possesses definite power to prevent the coagulation of blood. The symptoms of these cases suggest infantile paralysis (acute poliomyelitis) but they are probably to be distinguished from cases of that disease by the invariably transitory nature of their paralyses. In no instance has "tick paralysis" left permanent disability.

62. **New Malaria Plasmodia.**—The reasons underlying the production of morphologically atypical generations of malaria plasmodia are obscure, but Craig is convinced that insufficient dosage with quinin, and perhaps with other drugs, often leads to the production of such plasmodia and that these plasmodia may retain for several generations morphologic abnormalities produced by adverse agencies, either physical or chemical. He has followed infections in which the plasmodia were very atypical, being modified morphologically by the exhibition of small doses of quinin, and has seen a return to normal morphology when the drug was discontinued. One of the most common effects of quinin is a great stimulation in the ameboid activity of the malaria plasmodia and an apparent stimulation in the division of the chromatin, as evidenced by the presence of delicate pseudopodia containing an abnormal amount of chromatin during the early stages of development of the plasmodia.

Craig is satisfied that *Plasmodium tenue* is an atypical form of *Plasmodium vivax*. He has observed identical forms, so far as can be judged from the description and drawing, not once, but a considerable number of times, in supposedly untreated infections with *Plasmodium vivax*, and many times in infections with this plasmodium after the exhibition of doses of quinin insufficient to kill the plasmodia. Whether or not this parasite is identical with *Plasmodium vivax*, it cannot be accepted as a new species until the morphology of the parasites during the entire human life cycle at least is studied, for the only claim it now has to specific rank is the resence of slight differences in morphology during a very imited portion of the human life cycle; that is, the early npigmented stages of development when such differences e commonly observed even in the well-recognized species of plasmodia.

Journal-Lancet, Minneapolis

December 15, XXXIV, No. 24, pp. 643-670

65 *Suprapubic Cystotomy. T. Bratrud, Warren.
66 Trachoma. F. C. Smith, Yankton, S. Dak.
67 Acute Endocarditis. W. T. Cain, Underwood, N. Dak.
68 Arteriosclerosis. C. W. Watson, Minneapolis.

65. Abstracted in The Journal, Oct. 31, 1914, p. 1601.

Kentucky Medical Journal, Bowling Green

December 1, XII, No. 23, pp. 737-788

69 *Trachoma in Eastern Kentucky. J. A. Stucky, Lexington.
70 *Alcohol and Public Health. J. N. Hurty, Indianapolis.
71 *Renal Tuberculosis, Its Diagnostic Difficulties and Surgical Problems. F. Kreissl, Chicago.
72 Etiology of Rheumatism. J. M. Salmon, Ashland.
73 Prophylaxis and Treatment of Acute Rheumatic Fever. G. G. Thornton, Lebanon.
74 Obscure Rheumatism in Childhood. S. P. Garrison, Bellevue.
75 Classification of Joint Lesions. W. J. Gerding, Newport.
76 *Enuresis in Children. N. W. Moore, Cynthiana.
77 Injury to Parturient Canal. H. C. Clark, Falmouth.
78 Eradication of Disease. V. C. Vaughan, Ann Arbor, Mich.

69, 70 and 76. Abstracted in The Journal, Oct. 17, 1914, p. 1417.

71. Abstracted in The Journal, Oct. 17, 1914, p. 1416.

Lancet-Clinic, Cincinnati

December 12, CXII, No. 24, pp. 627-654

79 Nitrous Oxid-Oxygen in General Surgery and Obstetrics. C. K. Teter, Cleveland.
80 Arteriosclerosis and Its Relation to Mental Diseases. E. F. Leonard, Chicago.
81 Pathogenesis of Certain Neuralgias in Relation to Inflammation, Toxicosis and Neurosis. T. A. Williams, Washington, D. C.

December 19, No. 25, pp. 655-688

82 Intestinal Anastomosis. F. Reder, St. Louis.
83 Menorrhagia and Uterine Myoma Treated by Roentgen Ray. S. Lange, Cincinnati.
84 What Constitutes in Chronic Conditions, "Thorough" Examination, and What is Meant by "Medical" Treatment? C. Pope, Louisville, Ky.
85 Iron-Clad Electromagnet for Surgical Purposes; Comparative Value of U-Shaped Combination. G. T. Fette, Cincinnati.

Medical Record, New York

December 19, LXXXVI, No. 25, pp. 1035-1076

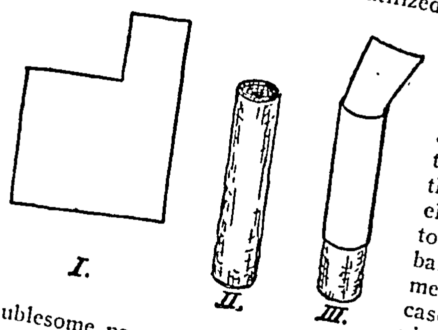
86 Gunshot and Shell Wounds. P. C. Fauntleroy, U. S. Army.
87 Infant Feeding with Top-Milk. J. M. Mabbott, New York.
88 Readings of Sphygmomanometer from Clinical Standpoint. E. G. Rankin, New York.
89 Delirium Gravé. Report of Three Cases and Differential Diagnosis. E. S. Brodsky, Westport, Conn.
90 Cyst of Cerebellopontine Angle, Operation with Relief of Symptoms. C. L. Dana and C. A. Elsberg, New York.
91 *New Method for Control of Postanesthetic Nausea. J. E. Lumbard, New York.
92 Why Fumigation Fails. C. F. Pabst, Brooklyn.

December 26, No. 26, pp. 1077-1126

93 Reflex Disturbances Due to Chronic Appendicitis. C. A. McWilliams, New York.
94 Gangrene without Organic Vascular Disease. L. Buerger and A. Oppenheimer, New York.
95 Intestinal Toxemia and Diabetes. A. C. Croftan, Chicago.
96 *Ehrlich's Aldehyd Reaction for Urobilin. S. Berkowitz, New York.
97 New Vesical Calculus Evacuator. M. W. Ware, New York.
98 *Therapy of Fever in Pulmonary Tuberculosis. E. N. Packard, Jr., Saranac Lake.

91. **New Method for Control of Postanesthetic Nausea.**—eing convinced that the prime factor in this nausea and vomiting is the smell of the anesthetic, Lumbard succeeded in controlling the nausea and vomiting by substituting some pleasant odor for the offensive smell. This he accomplished by the following method:

A piece of adhesive plaster is cut to the shape shown in *I.* in the accompanying figure. Then a piece of gauze is made into a roll of eight or ten thicknesses, about 2 inches long and ½ inch wide, as shown in *II.* Now the adhesive plaster is folded over the gauze roll, leaving a small end of plaster free to fasten to the nose, as shown in *III.* This appliance is fastened to the nose so that the free end of the gauze extends a short distance beyond the tip of the nose. On the end projecting beyond the nose is dropped a little perfume. A mustache may be utilized instead of gauze. The author's choice is oil of bitter orange peel. This perfume should be applied immediately after the anesthetic is withdrawn, the head being then elevated and turned to one side. Lumbard has tested this method in many cases, in which previous anesthesias had produced very troublesome nausea and vomiting with perfect success.



96. **Ehrlich's Aldehyd Reaction for Urobilin.**—The urines of twelve men were used by Berkowitz for this series of tests and three to four specimens in each instance, making a total of about forty analyses. In each urine a deep red color appeared as soon as the reagent was added, showing what would be considered a heavy urobilin reaction. In a series of 500 urine analyses of 214 patients with the aldehyd reagent performed independently of the clinical, operative, or post-mortem diagnosis, in a group of twenty-five patients whose urines were examined seventy-five times, only forty-eight reactions were positive. These patients represented medical, surgical and gynecologic ailments. In a majority of the cases the other chemical and the microscopic analyses were negative. In many instances there were no diseases which could be explained by any of the theories as the etiologic factor for the urobilinuria. The confusion that occurs in trying to arrive at any logical conclusions, Berkowitz states, limits the value of Ehrlich's aldehyd.

98. **Therapy of Fever in Pulmonary Tuberculosis.**—The points emphasized by Packard in the therapy of fever in tuberculosis are: First and foremost, absolute rest in bed, preferably out of doors; artificial pneumothorax in selected cases; a trial with autogenous vaccines, especially when there is copious purulent expectoration; the cautious use, if at all, of tuberculin, and then only after other measures have failed; hydrotherapeutic measures suited to the condition and comfort of the patient; and ample diet, but not necessarily "forced feeding;" and the judicious use of medicinal antipyretics.

Military Surgeon, Chicago

December, XXXV, No. 6, pp. 511-612

99 Fields for Useful Endeavor for Retired Medical Officers. C. J. Decker, U. S. Navy.
100 General Rules Governing Dressing Stations, with Suggestions for Changes in Equipment. P. L. Jones, U. S. Army.
101 Report of Medical Service School, New Jersey. W. G. Schauffler, N. J. National Guard.
102 Report of Surgical Service at Field Hospital Company No. 3, Texas City, Tex. A. W. Williams, U. S. Army.
103 Final Plea for Inactive Medical Reserve Corps. H. C. Coe, U. S. Army.
104 Osteoplasty in Modern War Surgery with Presentation of Case. J. Frank, Ill. National Guard.

Missouri State Medical Association Journal, St. Louis

December, XI, No. 6, pp. 249-296

105 Cause, Diagnosis and Treatment of Inflammation of Pelvis of Kidney. H. E. Pearse, Kansas City.
106 *Drainage in General Peritonitis. W. E. Leighton, St. Louis.
107 Production of Immunity by Tonsils and Adenoids in Children. J. Zahorsky, St. Louis.
108 Eclampsia. A. J. Chalkley, Lexington.
109 Use of Giant Magnet in General Practice. W. H. Luedde, St. Louis.
110 Exudative Middle Ear Catarrh. I. D. Kelley, Jr., St. Louis.
111 Value of Medical Society. W. K. Statler, Oak Ridge.

106. **Drainage in General Peritonitis.**—The method Leighton has employed consists in opening the abdominal cavity at the site of the focus of infection, treating the lesion as

indicated by the condition found with as little and as gentle handling of the peritoneum as possible, then inserting large cigarette drains to the pelvis, right inguinal region and right flank. The wound is closed rather loosely so as not to constrict the drains, as drainage and not the prevention of hernia is the aim sought. The patient is then placed in bed, without elevation of the head, in the ventral decubitus. The method has proven very successful. The drainage has been free and abundant for the first few days. The effect on the temperature has been striking. In several cases practically dropping to normal on the second day. In a series of nine cases of diffuse peritonitis, Leighton has had eight recoveries and one death, and in seven cases of local peritonitis there were no complications.

New Jersey State Medical Society Journal, Orange

December, XI, No. 12, pp. 597-648

112 *Mucous Colitis. D. A. Kraker, Newark.*
113 Diverticulitis. W. F. Faison, Jersey City.
114 Reduction of Infant Mortality. D. E. English, Summit.
115 Whooping-Cough. W. W. Riha, Bayonne.
116 Precancerous State. G. W. Cummins, Belvidere.
117 *Intraspinous Infections of Salvarsanized Serum. H. R. Livengood, Elizabeth.*

New York Medical Journal

December 19, C, No. 25, pp. 1193-1244

118 Case of Aphasia and Apraxia. A. B. Evarts, Washington, D. C.
119 Enteroptosis (Glenard's Disease). O. Lerch, New Orleans.
120 Gonorrheal Epididymitis and Its Non-Operative Treatment. W. J. Robinson, New York.
121 Cirrhosis of Liver in Wild Animals. H. Fox, Philadelphia.
122 Penetrating Gunshot Wounds of Abdomen. J. Frank, Chicago.
123 *Phenolsulphonephthalein Renal Function Test. J. I. Fanz, Philadelphia.
124 Autoserum Injections in Streptococcic Endocarditis. R. Abrahams, New York.
125 Eyestrain in Development of Tuberculosis. F. D. W. Bates, Hamilton, Ont.
126 *Sulphurous Acid in Treatment of Furuncles. P. G. Skillern, Jr., Philadelphia.*
127 Treatment of Chronic Leg Ulcers. H. D. Sonnenschein, New York.

123. **Phenolsulphonephthalein Renal Function Test.**—When making up the 1,000 c.c. standard 100 per cent. phenolsulphonephthalein solution, Fanz adds a quantity of the patient's urine, obtained just before injecting the indicator, equal in amount to the first hour's urinary output after the injection. The standard solution now will have approximately the same amount of urinary salts as the specimen solution, and the standard and urinary solution will equal each other in opaqueness and yellowish tint, making color comparison easy. To make up the standard solution, he uses 1 c.c. of the contents of an ampoule of the phenolsulphonephthalein, adds the patient's urine (obtained before injecting the indicator) in amount to equal the first hour's urinary output after appearance of the drug. Alkalinize this mixture with 25 c.c. of 10 per cent. potassium hydroxid, filter, and add sufficient distilled water to make up 1,000 c.c. This is the standard and contains 100 per cent. of the indicator in 1,000 c.c.

The first hour's urinary output after injection of the 2 c.c. phenolsulphonephthalein is now alkalinized with 25 c.c. of the 10 per cent. potassium hydroxid and filtered. To this is added enough distilled water to make 1,000 c.c. This is the test specimen. By diluting a unit of the standard, say 50 to 100 or 200 c.c. with distilled water until it matches the 1,000 c.c. solution of the first hour's urinary output the direct percentage of the indicator in the first hour's specimen can easily be estimated. Say, 100 c.c. of the standard had to be diluted up to 500 c.c. before it matched the first hour's specimen dilution, then the standard would be five times as strong as the specimen, or the specimen would contain 20 per cent. of phenolsuphonephthalein. The second hour's output of indicator (phenolsulphonephthalein) is estimated precisely like the first.

Ohio State Medical Journal, Columbus

December, X, No. 12, pp. 727-788

128 Intestinal Stasis: Medical Viewpoint. J. D. Dunham, Columbus.
129 Three Cardinal Signs of Fractures Near Joint. W. G. Stern, Cincinnati.
130 Morbidity in Puerperium. W. D. Inglis, Columbus.
131 Delayed Healing of Wound in Cataract Extraction and Its Proper Treatment. D. T. Vail, Cincinnati.
132 Nephropexy: Deductions Based on Study of Case Records. H. A. Baldwin, Columbus.
133 Polypoid Adenoma of Stomach. Report of Case. W. C. Stoner, Cleveland.

Oklahoma State Medical Association Journal, Muskogee

December, VII, No. 7, pp. 203-234

134 Two Conditions of Especial Interest to Both Internist and Surgeon. L. J. Moorman, Oklahoma City.
135 Peptic Ulcer—Etiology and Pathology. L. A. Turley, Norman.
136 Id. Diagnosis and Treatment from Internists' Viewpoint. L. A. Rieley, Oklahoma City.
137 Optimism, Pessimism and Nihilism. S. H. Landrum, Altus.
138 Conservative Surgery in Pelvic Infections of Neisserian Origin. C. von Wedel, Oklahoma City.

Surgery, Gynecology and Obstetrics, Chicago

December, XIX, No. 6, pp. 683-802

139 *Radical Operation for Cancer of Pyloric End of Stomach. W. J. Mayo, Rochester, Minn.
140 *"Lavandera's Ankle" (Bursitis Subcutanea Malleoli Externus). G. G. Davis, Manila, P. I.
141 Operative Treatment of Carcinoma of Penis. J. H. Cunningham, Jr.; Boston.
142 *Two Cases of Filariasis. G. E. Armstrong and E. J. Mullally, Montreal, Canada.
143 Surgical Myxorrhea Coli, Myxorrhea Membranacea and Myxorrhea Colica. S. G. Gant, New York.
144 Uterine Sarcoma. Report of Two Cases. W. D. Fullerton, Cleveland.
145 Dactylocostal (Osseous and Cartilaginous) Rhinoplasty. E. G. Blair, Kansas City, Mo.
146 The Duodenum: Roentgen Study. C. W. Lippman, San Francisco.
147 *Syndesmorrhaphy and Syndesmoplasty. C. E. Phillips, Los Angeles.
148 *Phenolsulphonephthalein Test from Viewpoint of Abdominal Surgeon. S. E. Tracy, Philadelphia.
149 Chronic Abdomen. Review of Nineteen Cases. F. G. Connell, Oshkosh, Wis.
150 *Some Considerations which Determine Extent of an Operation in Septic Invasion of Lateral Sinus. H. E. Jones, Liverpool, England.*
151 Polycystic Kidney; Analytical Study. C. E. Barnett, Fort Wayne, Ind.
152 Pseudomyxoma of Peritoneum. E. G. Lewis, San Francisco.
153 Enchondromata, with Special Reference to Scapula. M. T. Sudler, Rosedale, Kan.
154 Malignant Papillary Cystadenoma of Kidney with Metastases. H. L. Kretschmer and A. M. Moody, Chicago.
155 Efficiency of Seelig-Gould Method of Testing Antiseptic Solutions. L. U. Gardner, New Haven, Conn.
156 *New Method of Round Ligament Fixation. H. T. Goodwin, Tompkinsville, N. Y.
157 *Rubber Gloves: Technic of Mending. F. J. Cotton, Boston.
158 Thymic Asthma Successfully Treated by Roentgen-Ray. Report of Two Cases. H. J. Morgan and H. W. Dachtler, Toledo, Ohio.
159 *Electrothermic Coagulation and Roentgen Therapy in Treatment of Malignant Disease. G. E. Pfahler, Phildelphia.*
160 *Traumatic Diverticulum of Cecum Following Appendectomy. F. E. Bunts, Cleveland.
161 Anastomosis of Vas Deferens to Epididymis of Opposite Side for Sterility. F. R. Hagner, Washington, D. C.
162 An Aid to Little-Döderlein Method for Obtaining Lochial Culture. W. F. Shaw, New York.
163 *Method of Drainage in Suppurative Appendicitis. J. A. Pettit, Portland, Ore.
164 Internal Derangements of Knee-Joint. A. H. Tubby, London.
165 *Ferment Diagnosis (Abderhalden) for Cancer. C. Goodman and S. Berkowitz, New York.
166 *Method of Distending Veins of Forearm Preparatory to Intravenous Infusion or Salvarsan Administration. A. F. Hoge, Fort Smith, Ark.
167 Skin Suture. C. L. Heald, Cedar Rapids, Ia.

139. **Cancer of Pyloric End of Stomach.**—Twelve operations have been done recently in the Mayo clinic by Pólya's method with one death from pulmonary embolus, the necropsy showing perfect condition of the operative field. The technic employed is as follows: The diseased portion of the stomach is removed in the usual way and the stump of the duodenum closed and buried. An opening is made in the avascular arcade of the transverse mesocolon and the upper jejunum pulled through until it can be easily brought into contact with the stomach. The end of the stomach which is held in the crushing clamp of Payr, is united by suture to the loop of jejunum quite as the ordinary gastroenterostomy is made. If the diameter of the end of the stomach be very large, it can easily be diminished by placing

the sutures in such manner as to take a proportionately greater bite in the stomach than in the intestine, thus reducing the lumen of the stomach as the suturing progresses. The stomach is anastomosed to the jejunum at a point in which the jejunal blood supply is extraordinarily good, and the jejunum can be depended on to do more than its share in the healing process. Before the inner through-and-through sutures are placed, the stomach and intestine are grasped with elastic holding clamps to prevent soiling, the inner row of sutures is then run entirely around and the outer row completed. The entire anastomosed end of the stomach is then drawn down below the transverse mesocolon and the margins of the opening in the transverse mesocolon carefully attached by a number of sutures to the wall of the stomach. Fine silk is used for the peritonemuscular sutures and chromic catgut for the through-and-through inner row.

140. **"Lavandera's Ankle."**—In Manila Davis found a bursitis which he terms "lavendera's ankle." Many of the washerwomen, or lavanderas, do their washing in the rivers; and generally a flat rock which is close to the surface of the water and well down in the river is selected. The position assumed when working is such that the lateral aspect of the leg is next to the rock, the external malleolus thus coming forcibly in contact with the hard surface. The weight of the opposite leg rests on the median aspect of the leg next the rock. And thus with the to-and-fro scrubbing movements a considerable pressure is applied over the prominence of the external malleolus. Histologically, the walls of the bursa are found thickened, and the pathologic process may be classified as chronic fibroid or proliferative bursitis.

142. **Two Cases of Filariasis.**—The clinical manifestations of the two cases reported by Armstrong and Mullally were similar. The outstanding feature of interest in the pathologic findings was the presence in each case of a huge lymphatic varix, extending from the groin into the thorax, unassociated with a chylous exudate.

147. **Syndesmorrhaphy and Syndesmoplasty.**—An operative condition of the ligaments in Phillips' opinion exists in frank injuries in which there is reasonable grounds for suspecting a completely ruptured ligament; in old sprains in which after the lapse of one or two months there is still distinct abnormal mobility; in cases of recurring sprains leading to frequent disabilities; in compound sprains or in compound dislocations.

148. **Phenolsulphonephthalein Test.**—Tracy does not believe it to be possible to work out the minimum percentage phenolsulphonephthalein output which will be safe to undertake surgical operations, nor is it possible from the phenolsulphonephthalein test to determine what cases should or should not be subjected to operation. He believes it will never be possible to determine this point by any laboratory test, as the functional activity of a kidney varies under numerous circumstances and at different times. In determining whether or not a patient should be subjected to operation, the history, clinical symptoms, and physical examination are of much greater value than any renal functional test yet devised. The phenolsulphonephthalein test used in conjunction with the clinical symptoms, history and physical examination is of value. A small percentage output should put the surgeon on his guard and cause him to study the patient most carefully before undertaking an operation. The phenolsulphonephthalein test should be used only as one of the many methods of investigation in ascertaining the condition of the patient.

Tracy studied 100 cases. The dye appeared in the urine from five to forty-two minutes, the average being ten minutes and eighteen seconds. The average output for the first hour was 34.27 per cent., for the second hour 20.83 per cent. and for the two hours 55.1 per cent. In 91.7 per cent. of the tests the output was greater in the first hour. In 8.3 per cent. of the tests the output was greater in the second hour. In 20 per cent. of the tests there was 4 per cent. or less than 4 per cent. difference between the output in the first and second hours. Five cases, with the lowest phenolsulphonephthalein output in the series, were subjected to major operations and had a normal convalescence. Other cases with a much higher phenolsulphonephthalein output had a complicated convalescence, with evidence of renal disturbances. One case with a phenolsulphonephthalein output of 53 per cent. died of uremia in less than two months. Another case with a phenolsulphonephthalein output of 72 per cent. died of uremia in less than one month. A third case with a phenolsulphonephthalein output of 55.5 per cent. died in the hospital of uremia fifty-two days after operation. A case with a phenolsulphonephthalein output of 87.5 per cent. died in the hospital of uremia five days after operation. In some cases the phenolsulphonephthalein output was less after the patients were placed in bed and the excretory organs toned up; in other cases the output increased. In determining the functional activity of each kidney, Tracy says, the test should be applied several times and the average taken. The result should then be checked up by other tests.

156. **New Method of Round Ligament Fixation.**—In Goodwin's method the abdomen is opened in the usual way, the round ligament separated, and by means of a ligature carrier, which has been thrust through the rectus muscle, drawn to the surface of that muscle. The loop of round ligament is held up by an assistant and the surgeon, either with scissors or scalpel, commencing at the site in which the ligament has been drawn through, cuts for about three-quarters of inch in length in the direction of the fibers and toward the pubis the rectus muscle and underlying tissues, including the peritoneum. The assistant then holds at the upper angle of this incision one side of the loop of round ligament and places and holds the other side in the lower angle. While so held the loop arches over the incision made in the rectus, one pillar being in the upper, the other in the lower angle. The surgeon, working under this arch, sutures together with catgut the edges of the incision in the rectus lying between the pillars held in the upper and lower angle, being careful to bring together the fibers of the muscle in the same apposition they were before incised. This leaves the loop of ligament resting on a bridge of muscle three-quarters of an inch long, one end of the ligament passing into the pelvic cavity through a small opening in the lower angle of the incision and the other through a similar opening in the upper. It is impossible for the ligament to get away from its moorings and drop back into the pelvic cavity. Although it is not necessary, the end emerging from the one descending into the pelvic cavity may be anchored at its site by passing one suture through it and the rectus muscle.

157. **Rubber Gloves: Technic of Mending.** — Cotton describes his technic as follows: Take an ordinary library filing card, spread it rather heavily with ordinary library paste, and paste on it the rubber tissue (Cotton uses dentists' rubber dam of light weight), smooth this flat, and let the paste dry. Then when a patch is needed, cut one out, rubber, card and all, to fit the tear. Put the glove on the hand, inside out, moisten the patch with cement, let it dry for a few seconds, fit it on in cases in which it belongs and press it home hard. If the tear is large it is easier to lay the moistened patch down and fit the edges of the tear to it, then press. That is all there is to it, except for powdering the glove and laying it by. Later, soak it in water and the bit of card comes away as the paste dissolves. This gives a secure patch, adherent clear to its edges, flat and water-tight, and fit to stand boiling as well as any patch is.

160. **Diverticulum of Cecum Following Appendectomy.**—Following appendectomy the pain of which Bunts' patient previously complained, entirely disappeared for nearly a year, when she began to have renewed attacks of pain in the right side. Examinations were made on various occasions and it seemed that the pain must be due to a slightly enlarged ovary on the right side. Bunts opened the abdomen through the right rectus muscle and found the right ovary slightly enlarged and cystic. As a matter of curiosity he examined the site of the previous appendiceal operation and found a distinct white ring in which the purse-string suture had been placed, but spread out to nearly three-fourths inch in diameter. From this ring there protruded a pouch like

the finger of a glove, though somewhat conical and nearly one inch in length. By squeezing the cecum, he could force this to balloon with gas. Its wall was quite thin, apparently devoid of any mucosa, and could be invaginated easily back into the cecum. Feeling that the distention of this diverticulum might be the cause of some of her colicky pain and that its extreme thinness might make it a positive source of danger from rupture, it was pushed back into the cecum and a double row of purse-string sutures applied to close the opening. Subsequent to the operation the pain had disappeared. Since this time, Bunts has examined the cecum in all pelvic operations in which the appendix had previously been removed and has found two more distinct cases, though not nearly so large as the first, but the widened ring and thin dilatable wall were plainly to be seen, and in all he followed the procedure used in the first case.

163. **Method of Drainage in Suppurative Appendicitis.**—Pettit drains in these cases close to the ilium, so that the lateral wall of the abdomen forms one wall of the sinus.

165. **Ferment Diagnosis for Cancer.**—In a series of cases of malignancy Goodman and Berkowitz were able to obtain thirty reactions out of thirty-three cases in which the results corresponded to operative post mortem and clinical findings. One case of carcinoma was not diagnosed and one negative case was diagnosed as a sarcoma.

166. **Method of Distending the Veins of Forearm.**—The method used by Hoge consists in using an inflatable rubber bag about 4 inches in width and long enough to encircle the arm (the arm-band from a blood-pressure apparatus answers admirably), with a tube attached leading to a hand pump with a screw-escape valve. The arm-band is placed in position around the arm, well above the site of insertion of needle or cannula. Inflate the bag with the hand pump. This causes a stasis of the venous circulation without perceptibly obstructing the arterial flow, and any desired degree of distention of the obstructed veins may be produced. When the needle has been inserted (closed method) or the vein has been freed and the cannula inserted (open method) turn the screw-escape valve, releasing pressure and permitting reestablishment of the venous flow. The solution may then be permitted to flow in as rapidly as is desirable.

Wisconsin Medical Journal, Milwaukee

December, XIII, No. 7, pp. 257-296

168 Focal Infections and Their Relation to Systemic Diseases. F. Billings, Chicago.
169 Vaccine Treatment of Various Infections. E. C. Rosenow, Chicago.
170 Typhoid Vaccination. E. C. Pratt, Kankakee, Ill.
171 Annular Opacity of Anterior Surface of Lens After Traumatism. C. Zimmermann, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Roentgen Ray, London

December, XIX, No. 7, pp. 239-274

1 *Diathermy. E. P. Cumberbatch.
2 *Simple and Rapid Method of Localizing Bullets. (Ring Localizer.) F. Hernaman-Johnson.
3 Roentgen Ray Diagnosis of Gastro-Intestinal Conditions, with Special Reference to Appendicitis. A. F. Hertz.
4 Comparative Value of Roentgen Ray and Radium in Treatment of Malignant Growths. J. MacIntyre.

1. **Diathermy—Its Production and Use in Medicine and Surgery.**—When diathermy is to be used for surgical purposes, Cumberbatch states the current must be led through the tissues that are to be destroyed. Two electrodes are required. One of these, the active electrode, is placed on the morbid tissue, the other, the indifferent electrode, is placed on the skin of some other part of the body. The current then passes through the body between the electrodes and heats all the tissues, both normal and abnormal, along its path. It is therefore, necessary to adopt some device so that the temperature of the abnormal tissues may be raised sufficiently high to cause them to coagulate, without at the same time injuriously heating the normal parts. In other words, the life-destroying heat must be restricted to the abnormal tissues. This will be the case if the indifferent electrode makes contact with a large surface of the body and the active electrode with a small surface of the morbid tissue. The parts under the indifferent electrode, if the latter is sufficiently large, will be but slightly warmed, because the path for the current in these parts is wide and its resistance correspondingly low. The parts in contact with the active electrode will be strongly heated because the path for the current is narrowest in this situation and its resistance highest. The highest temperature will always be in the tissue in immediate contact with the active electrode, while in the tissues along the path of the current the temperature will be progressively lower as the distance from the active electrode is increased, till at a certain distance the tissues will be outside the destructive influence of the diathermy.

This distance is determined by the temperature that is reached at the active electrode. If the temperature at this electrode is sufficient to coagulate the tissue, destruction of the latter will extend only for a short distance around. As the temperature is raised the coagulation spreads further. When the temperature reaches a certain point the tissues in contact become dry, and then they conduct the current badly, and the needle of the ampèremeter swings back toward zero. Loud crackling sparks leap over and through the dried tissue on to the moist tissue around. If the current is not switched off violent commotion ensues around the electrode, sparks dart around and bubbles of steam escape from the tissue. Coagulation spreads further and the tissue around the electrode becomes dry and hard. This stage is reached sooner when the active electrode makes a small contact with the tissue, because the smaller the contact the narrower the path for the current, the higher the resistance the greater the heat. It is advisable, when performing diathermic cautery on the living subject, to switch the current off when sparks begin to appear, because there is at this stage not a pure diathermy effect; that is to say, there is excitation of muscles and nerves as well as heat penetration. This excitation might become extremely violent.

2. **Simple and Rapid Method of Localizing Bullets.**—A method of which Hernaman-Johnson has made considerable use is the following: Suppose a bullet has lodged somewhere about the middle of the thigh. The patient is placed on an ordinary examination couch having the tube beneath. His feet are placed together, with toes pointing directly upward. The Roentgen rays are turned on with a widely open diaphragm, and the general position of the bullet ascertained by the fluorescent screen. The aperture is now gradually narrowed, and the tube moved about so that the image comes into the center of the field, which, if the anticathode has been correctly centered will be a perfect circle. This process is continued until the illuminated patch is not more than 1 inch in diameter. The image of the bullet is now vertically above the bullet itself.

The only special device necessary is now used. It consists of a metal ring having an internal diameter of about ¾ inch fixed to the end of a flat wooden handle 1 foot in length. The ring is slipped under the screen, and moved until its shadow encircles that of the bullet. A mark is made on the skin with silver nitrate in the center of the ring, the screen being first removed, but care being taken not to displace the "ring-localizer." Next, the screen is readjusted and the ring is now slipped between the patient and the couch. The encircling position is again found, and a second mark made, this time on the skin of the lower aspect of the limb. If everything has been carried out properly, this second mark will be found vertically below the first.

To ascertain at what distance below the surface the bullet will be found the patient is rolled over on his side. The original procedure is now repeated and two other marks are obtained, a line joining which cuts a line joining the first two at right angles. The patient is now returned to his former position, and an inspection of the marks will enable one to judge within half an inch the distance at which the bullet lies below the surface.

Points essential to the success of the method are: 1. The beam of Roentgen rays must be vertical, and the shadow of the bullet must be maneuvered into the center of the small illuminated field. 2. The "ring-localizer" must accurately encircle the bullet shadow. 3. The nitrate of silver marks must be placed at the center of the ring. It is better to make dots for the vertical marks, and crosses for the horizontal, in order to avoid subsequent confusion. 4. Whenever the nature of the case permits, the patient should be operated on in one or other of the positions in which the localizing was carried out. 5. Lastly, wherever possible, the patient should be taken directly from the examining couch to the operating room. Bullets sometimes alter their position to some extent even in twenty-four hours and undeserved discredit is thereby brought on the art of the radiographer.

British Medical Journal, London

December 5, II, No. 2814, pp. 953-1004

5 Value of Radiography in Diagnosis of Bullet Wounds. J. Bland-Sutton.
6 Threshold of Disease. J. A. Lindsay.
7 *Acute Appendicitis and Acute Appendicular Obstruction. D. P. D. Wilkie.
8 Leeches. A. E. Shipley.

December 12, No. 2815, pp. 1005-1052

9 Transient Paraplegia from Shell Explosions. T. R. Elliott.
10 *Antiseptics in War. G. L. Cheatle.
11 Cockroaches. A. E. Shipley.
12 Incipient Pulmonary Phthisis of School Children. W. Overend.
13 *"Elderton" Method of Control in Testing Value of New Tuberculin. H. B. Shaw.
14 Artificial Pneumothorax. H. deC. Woodcock and J. A. M. Clark.

7. **Acute Appendicular Obstruction.**—Wilkie summarizes his paper as follows: Two acute pathologic processes are met with in the vermiform appendix—acute appendicitis and acute appendicular obstruction. Clinically acute appendicitis is distinguished by the signs of inflammation, there being from the onset a rise in pulse and temperature. Acute appendicular obstruction gives rise to vomiting, colicky pain, and abdominal tenderness, but at the outset to no appreciable rise in pulse or temperature. The changes occurring in an appendix the lumen of which is completely obstructed depend on the presence or absence of fecal matter within its lumen. In experimental obstruction in an artificial appendix the changes vary greatly according to the nature of the diet of the animal previous to the experiment, rich protein diet being associated with much more rapidly destructive changes than carbohydrate. Undigested protein, putrefactive bacteria and an alkaline reaction together produce rapid gangrene in the walls of the obstructed organ. The prevalence of the severe forms of acute appendicular disease in Western as contrasted with Eastern people is probably to be explained by the animal diet indulged in by the former. On the same lines may be explained the increasing frequency of such disease in large industrial areas and its relative frequency in the male sex.

10. **Antiseptics in War.**—Cheatle advocates the use of the following solution in place of iodin: a mixture of 1 in 20 phenol and 1 in 500 mercury perchlorid in absolute alcohol. It is colored with rosalin. The value of this combination is as follows: 1 in 20 phenol is a solvent of fat as well as a germicide. Mercury perchlorid is a most powerful germicide. Rosalin has an important action in being a mordant. Wherever the dye is seen mercury perchlorid is present even weeks after application. Alcohol dries sooner than water, it does not macerate the tissues so much, and it appears to encourage greater penetration of the antiseptic. No case has suffered from mercurial or phenol poisoning, although it has been applied frequently and freely to large granulating wounds.

Glasgow Medical Journal

December, LXXXII, No. 6, pp. 401-476

15 *Congenital Syphilis. L. Findlay and M. E. Robertson.
16 Education of Semiblind. W. B. I. Pollock.
17 Esophagotomy for Removal of Tooth-Plate. W. Downie.

13. **Control Method of Testing Value of New Tuberculin.**—An analysis of eighty-four cases treated by reactionless doses of tuberculin is given by Shaw. Of 23 cases which improved, 11 had been treated with tuberculin, 12 had not. Of 29 cases which were worse, 16 had been treated with tuberculin, 13 had not. Of 32 cases which remained *in statu quo*, 15 had been treated with tuberculin, 17 had not. So far as afebrile cases are concerned, Shaw says, the reactionless dosage with tuberculin gives more favorable results than treatment without tuberculin, as far as these cases are concerned.

15. **Wassermann Reaction in Congenital Syphilis.**—Findlay and Robertson state emphatically that the Wassermann reaction at least in Scotland is practically only found in syphilis, and, if properly controlled, is a test of great diagnostic value. A condition of chronic eczema situated at the angles of the mouth and invading the mucous membrane of the lips, is often of a syphilitic nature. Congenital heart disease is not infrequently found in patients suffering from congenital syphilis, as evidenced by a positive Wassermann reaction. About 45 per cent. of cases of spastic diplegia and 60 per cent. of mental defectives also seem to be the subject of congenital syphilis, as evidenced by a positive Wassermann reaction.

Lancet, London

December 12, II, No. 4763, pp. 1343-1396

18 Modern Aspects of Certain Problems in Pathology of Mental Disorders. E. Goodall.
19 Wounds of Soft Parts Produced by Modern Bullet. G. H. Makins.
20 Fatal and Exceptionally Intense Infection with Malaria (P. Falciparum). J. W. S. MacFie.
21 *Insomnia and Suicide. C. E. Pronger.
22 Experiments on Germicidal Action of Colloidal Silver. W. J. Simpson and R. T. Hewlett.

21. **Insomnia and Suicide.**—The influence that slight refractive errors have in causing many of the functional nerve troubles so prevalent in these days is discussed by Pronger. Among these insomnia has naturally had a prominent place. Slight errors of refraction although not causing any visual defect, are of great importance in that they give rise to sundry neuroses. Especially, says Pronger, should these slight degrees never be ignored in any case of insomnia, because some error is nearly always present in those cases not associated with organic disease, such as tumor, kidney troubles, and the like, or with persistent pain from any cause. Insomnia is not usually the only symptom, but is generally associated with attacks of great depression, and often with giddiness or headaches. A few illustrations are given by Pronger of what can be done for the relief of insomnia, and also of some of the difficulties that have to be surmounted, particularly the scepticism of the patient as to the possibility of glasses being of use for such a purpose, especially if the sight is good or an oculist has already been seen.

Archives de Médecine des Enfants, Paris

August, XVII, No. 8, pp. 561-640

23 *Encephalitis and Acute Ataxia. L. Guinon.
24 Prophylaxis of Tuberculosis in Children by Removing Them from Infected Environment. (L'oeuvre de Grancher à Lyon.) E. Weill and G. Mouriquand.
25 Meningitis with Associated Meningococcus and Tubercle Bacilli. Loubet, Auban and Riser.
26 *Tetanus Inoculated from Felt Pad. A. Broca and M. Hondré.
27 Pneumonia with Symptoms of Appendicitis; with Expulsion of Ascaris; Two Cases. M. Lassalle.

23. **Encephalitis and Acute Ataxia.**—Guinon declares that when a child has fever and convulsions the trouble is always labeled "meningitis" and no one seems to think of encephalitis as the true cause of the symptoms. He reports two cases in detail which seemed to be actual encephalitis of a mild type, the children recovering completely. Both cases occurred during the epidemic of poliomyelitis in 1910, and each of the children had recently passed through measles. The first symptoms in one case had been sudden loss of the use of the legs, without impairment of consciousness, headache or vomiting. This period was followed by gradual loss of the intelligence; the language became that of a child a year old, with cries and restlessness, stiff neck and rigidity of the left side. After two weeks of this there were six days of torpor, apparent unconsciousness, except that the child wept. The face was very red but there was no Kernig sign nor rigidity

of the back of the neck and the eyes seemed normal. There was a general stiffness and exaggeration of the reflexes. There was also contracture on the right side of the face and left side of the body. The symptoms gradually subsided, a phase of aphasia and ataxia following, but the child entered on convalescence about the thirtieth day and in ten days was practically cured. The main reliance in treatment had been on hot baths, chloral and potassium bromid. The temperature kept about 37.5 C. In the other case headache and pain in the neck with rigidity at the back of the neck were the first symptoms to attract attention. The knee-jerk was exaggerated and the plantar reflex in extension. The face was extremely red but there was little or no fever. During the first two or three weeks there was apparent unconsciousness, incontinence, continual whining but almost absolute inertia to stimuli of all kinds but without anesthesia to pain. Then followed ten days of extreme restlessness, the choreic movements of the head causing erosions; the face was intensely red; the legs were still stiff but the child began to understand what was said to him and was able to drink and there was no further incontinence. The third phase was a rapid convalescence to a complete cure. The cerebrospinal fluid was always found normal which eliminated hemorrhage and microbian meningitis. The syndrome resembled that described by Leyden in 1868 as acute ataxia, but the incoordinate movements were not always of this type. They resembled more those of chorea at times.

26. **Tetanus from Use of Felt Pad in Treating Scoliosis.**—The cases of tetanus described here were mentioned recently in these columns, 1914, lxiii, 44.

Presse Médicale, Paris

November 19, XXII, No. 76, pp. 681-696

28 *Handy Mufflers for the Soldiers. Michel.
29 Localization of Foreign Bodies. (Localisation des projectiles dans le corps des blessés par voie radiographique.) E. Colardeau.
30 Phenol in Tetanus. Talamon and M. Pommay.
31 Improvised Inexpensive Hospital Equipment. (Aménagement d'un hôpital temporaire par des moyens de fortune.) J. Gourdet.
32 Methylene Blue Test for Purity of Milk. (Les réductases du lait de vache.) G. Vitoux.

28. **Handy Mufflers for the Men in the Trenches.**—Dr. Michel, the inventor of the clips used in closing wounds, now presents a muffler for the soldiers in the field which can be used for a hood, a vest, a body band, muff or a jacket as desired. The muffler is crocheted, about 1.2 meters long by 40 cm. wide (about 48 by 16 inches). A slit 20 cm. long (about 8 inches) is left lengthwise in the center, and buttons are sewed on each end and along half of the edge of each side—about two dozen buttons in all. Crocheted mufflers are much better than knitted or cloth ones, he states. The crochet should be loose with a simple single double stitch. The large meshes permit the buttons to be buttoned anywhere in the muffler, thus fitting it to any surface. Several mufflers buttoned together make a warm blanket.

Beiträge zur Klinik der Tuberkulose, Würzburg

September 15, XXXII, No. 2, pp. 147-255. Last indexed Jan. 2, p. 90

33 *Conjugal Tuberculosis. (Statistisches über die Tuberkulose der Ehegatten.) L. Levy.
34 Variations in Weight in Pulmonary Tuberculosis during Sanatorium Treatment. (Gewichtschwankungen bei Lungenkranken während der Sanatorienbehandlung.) N. J. Strandgaard.
35 Chemotherapy of Pulmonary Tuberculosis. (Experimentelle und klinische Studien über die Einwirkung von Borcholin und Aurum-Kalium-Cyanatum auf die Lungentuberkulose. A. Mayer.
36 *Acutest Form of Tuberculous Septicemia. (Typhobacillose Landouzys.) F. Reiche.
37 Friedmann's Treatment for Tuberculosis Kills Five Guinea-Pigs. (Die Virulenz des Friedmannschen Tuberkulosemittels.) K. Kaufmann.

33. **Conjugal Tuberculosis.**—Levy devotes seventeen pages to the tabulated details of 317 families at Posen in which husband or wife or both were under medical supervision for pulmonary tuberculosis. They show that infection of the consort is of extremely rare occurrence although it is possible. When the consort does develop tuberculosis, it runs an exceptionally mild course. If the tuberculous husband or wife is removed from the environment, the secondarily infected consort soon conquers the tuberculosis. Among those resisting infection from their tuberculous consort there were many who were "scrofulous" during youth. The tables sustain the assumption that infection with tuberculosis occurs early in life among wage-earners. Also that an infection of this kind confers immunity to new infection later in life or, if infection occurs, the course is essentially milder.

36. **Acute Tuberculous Septicemia.**—Reiche comments on the extreme rarity of this most acute form of tuberculosis—Landouzy's typhobacillosis. It simulates typhoid and the lesions are solely those of congestion and degeneration, not reaching the stage of tubercle production as the disease either subsides to complete recovery or proves speedily fatal. In a recent case, in a girl of 18, the course was typical of this septic tuberculous typhobacillosis. No tissue reactions suggesting tubercles were found at necropsy about a month after the first symptoms had been noted. In explaining the syndrome, he suggests that the septicemia itself might have entailed the peculiar anemia and hemorrhagic diathesis, or the escape into the blood of tuberculous masses from an old cheesy bronchial gland might have failed to induce miliary tuberculosis only because the bone marrow had been suffering from a degeneration resembling that of leukemia. Still another causal possibility is that a primary anemia with pathologic reaction of the bone marrow had reduced the resisting powers of the organism to their lowest point.

Berliner klinische Wochenschrift

November 23, LI, No. 47, pp. 1829-1852

38 Nervous Disturbances in Children. (Nervöse Störungen bei Kindern.) O. Katz.
39 *Mycosis of the Skin from Wearing Old Sweaters and Woolen Underclothes. (Pilzerkrankung der Haut, infolge des Gebrauches wollener Unterwäsche.) Isaac.
40 Agglutination Test for Differentiation of Yeasts. (Differenzierung einzelner Hefearten mit Hilfe spezifischer Agglutinine.) S. Lichtenstein.
41 Nucleic Acid Compounds in the Nissl Bodies of the Ganglion Cells. M. A. van Herwerden.
42 *Sterilization of Women by Roentgen Exposures. (Röntgensterilisierung.) L. Görl.
43 Vaccine Therapy of Neuralgia and Neuritis. (Heilung der Neuralgie und Neuritis durch Bakterientoxine.) Döllken. Commenced in No. 46.

39. **Mycosis from Woolen Underwear.**—Isaac says that a number of cases of a puzzling skin affection which simulates psoriasis or syphilids have been encountered with the onset of cold weather. They proved to be a fungus trouble, and he has traced the fungus to woolen sweaters and woolen underwear that had been laid away during the summer and then put on without washing.

42. **Sterilization with the Roentgen Rays.**—Görl reiterates that when on account of constitutional disease it becomes necessary to prevent further conception, operative sterilization should be recommended for women under 40. After that age Roentgen exposures answer the purpose fully as effectually and with the minimum of discomfort, as also when an operation is contra-indicated on account of heart or kidney disease, diabetes or hemophilia. He discusses the literature on the subject and the technic. A 3 mm. aluminum filter guards against mishaps.

Deutsche medizinische Wochenschrift, Berlin

November 17, XL, No. 47, pp. 1977-2000

44 *Erysipelas. (Wundinfektionskrankheiten. III.) G. Jochmann.
45 *Tetanus. (Behandlung schwerer Tetanusfälle.) T. Kocher. Commenced in No. 46.
46 Small Wound Where Bullet Entered and Large Wound Where It Emerged: Three Cases. (Verletzungen durch Dum-Dum-Geschosse.) B. Riedel.
47 *Injury from Shell without Direct Contact. (Aetiologie der Granat-Kontusionsverletzungen.) O. Harzbecker.
48 *No Transmission of Nervous Irritation from One Eye to the Other. (Ueber sympathische Reizübertragung.) A. Elschnig.
49 *Lipoid Substances in Sediment of Children's Urine. E. Reinike.

44. **Erysipelas.**—Jochmann comments on the rarity of erysipelas among the wounded now, but adds that when it does occur the prognosis is unusually grave on account of the superposed damage from the wound. The mortality from erysipelas of the face is generally accepted as between 3 and

5 per cent. but involvement of the larynx is liable to prove fatal unless tracheotomy can be done in time. Sepsis following erysipelas generally runs a particularly severe course. He has tried all kinds of treatment and found that the simplest measures seem to be as effectual as any. All owe their efficacy mainly to the tendency towards spontaneous subsidence of the erysipelas. He now uses almost exclusively merely cooling applications of aluminum acetate or a boric acid solution, frequently renewed. The patient finds this refreshing. For the face he applies boricated petrolatum on gauze. To keep the process from spreading, he applies a broad constricting band or straps the region with plaster and has found these occasionally but not always effectual in keeping it within bounds. Local application of superheated air has given rather favorable results in the hundred cases in which he has induced hyperemia in the region by this means. Antistreptococcus serum has also impressed him favorably by its influence on the general condition. The pulse grew better and the mind clearer, but no special influence on the local process was apparent.

45. **Tetanus.**—Kocher analyzes recent literature on the treatment of tetanus and reiterates from his own experience that general anesthesia may tide the patient through severe convulsions. He mentions also that rhythmical inhalation of oxygen under an atmospheric overpressure of 3 cm. water put an end to the menacing cramp of the muscles of respiration in a case recently reported by Jehn in which the paralysis of respiration persisted after severing the phrenic nerve on each side. Kocher has had six adult patients with extremely severe tetanus recover under intraspinal administration of magnesium sulphate supplemented by intratracheal inhalation of oxygen and tracheotomy. With the Meltzer technic tracheotomy is not necessary.

Wicki ascribes the action of the magnesium sulphate to dehydratation of the spinal cord and nerve roots by the drug, and this would explain the transitory nature of the effect and the lack of any permanent injury from it. Kocher emphasizes that the desired influence on the tetanus can be counted on only when the full dose has been given, that is, enough to cause the complete relaxation of the contracted muscles. If one injection does not suffice, others must be given, and thus kept up until the tetanus toxin in the body has exhausted its effect. He has repeated the intradural injection as many as ten times. Hotz has reported two cases of recovery under subcutaneous injections of magnesium sulphate; one patient was given 40 gm. twice a day for five days.

Kocher advocates a preventive injection of 10 or 20 gm. of antitetanus serum for every wounded soldier; on the slightest sign of tetanus, a supplementary injection under local anesthesia of 10 c.c. in the vicinity of the wound and in exposed muscle tissue, supplemented by endoneural injection to block the nerve and, further, intraspinal injection of 10 c.c. after allowing about that amount of fluid to escape. The wound is to be cleared out and kept open, protected only with a thin layer of gauze. If the patient is a vigorous man, from 30 to 45 gm. of a 25 per cent. solution of magnesium sulphate should be given by subcutaneous injection if the reflex excitability is increased and the muscles are stiff, repeating the dose if the symptoms persist or become mildly aggravated, reenforcing these measures at need with large doses of chloral—at least 2 gm. at a dose up to 12 gm. in the twenty-four hours. If the symptoms grow worse, 10 c.c. of the 15 per cent. solution of magnesium sulphate should be injected into the dura, the patient reclining flat with head raised. If the muscles do not relax in fifteen minutes, the neck and head should be lowered. When the symptoms and condition permit, the subcutaneous can be substituted for the intraspinal technic or chloral can be given the preference. The intraspinal injection is liable to induce paresis of the bladder, so evacuation of the bladder must be supervised, and the menace of paralysis of the respiration must be constantly borne in mind. An ample supply of water must be ensured and the bowels kept open with glycerin enemas. Cooling of the body with ice-bags seemed to have favorable influence in some of his cases.

47. **Injury from Exploding Shell Without Direct Contact.**—Harzbecker analyzes four cases of hemiplegia following the air concussion from a shell bursting from six to twelve feet away. The symptoms and course of the disturbance indicate that the air concussion burst a blood-vessel in the brain, lung or eye. In two cases there was a typical apoplectic attack, leaving hemiplegia. When such a concussion proves immediately fatal without signs of external injury there is probably some small hemorrhage into some vital part, like the respiration center, or profuse internal hemorrhage.

48. **No Transmission of Experimental Irritation from One Eye to the Other.**—Elschnig found that the composition of the vitreous humor—as indicated by the refractometer—is constant in the rabbit eye. The difference between the two eyes is zero or a very minute fraction. This permits instructive experiments with irritation applied to one eye, as transmission of the irritation to the other eye would be at once evident in the refractometric findings. His numerous experiments were constantly negative. Even injection of croton oil or subconjunctival injection of strong salt solution failed to induce any signs of irritation in the untreated eye at any time during the following two weeks. The research was done on rabbits, monkeys and dogs under general or local anesthesia and led to nothing which can serve in any way to sustain the assumption of sympathetic transmission of irritation by way of the nerves as the cause of sympathetic ophthalmia.

49. **Lipoid Substances in Children's Urine.**—Reinike examined with the polarization microscope the urine of a hundred children and found a lipoid in the sediment in eight cases. In four the findings were brief but in the others the lipoid content kept constant through weeks and months. In two of these cases the kidney was the seat of chronic degenerative processes with edema, ascites and uremic attacks. The first was a girl of 12 and the kidney disease was of two years' standing. The other was a girl of 4 with serious kidney disease for ten months. No preceding infectious disease was known in either case. The two other children presented symptoms of a mild kidney trouble and only the discovery of the lipoids in the urinary sediment suggested the severity of the kidney disease, confirmed by the course of the cases. The discovery of these optically active lipoids in the urine sediment thus serves to differentiate even in children degenerative kidney disease from the inflammatory and functional. He never found such large proportions of these lipoids in children as he has found in some adults, especially in one adult case of syphilitic disease of the kidney. On the other hand, he has never found them in the urine of healthy children or in those with acute disease.

Medizinische Klinik, Berlin

November 22, X, No. 47, pp. 1703-1726

50 Protection against Epidemic Diseases at Vienna. (Sanitätspolizeiliches.) A. Böhm.
51 *Oxygen in Treatment of Gas Phlegmons. (Behandlung der Gasphlegmone mit Sauerstoffeinblasung.) P. H. Sudeck.
52 War Injuries of the Eyes. (*Augenverletzungen im* Kriege und ihre Behandlung.) C. Adam.
53 War Injuries Affecting the Ears. (Kopfverletzungen im Felde vom Standpunkte des Otologen.) R. Goldmann.
54 *Treatment of Chilblains. (Frostbeulen.) Schwering.
55 *Treatment of Leukorrhea. (Fluor albus.) E. Zweifel.
56 Case of Adalin Poisoning. (*Adalinvergiftung.*) H. Dierling.
57 Influence of Balneotherapy on the Concentration of the Blood in the Capillaries. J. Löwy.
58 *Treatment of Decubitus. O. Nordmann.

51. **Oxygen in Treatment of Gas Phlegmons.**—Sudeck reports that he was able to save not only the life but the limbs of two men each of whom had had the bone in one arm much shattered and an extensive gas phlegmon had developed in the purulent wound. Thiriar plays a jet of oxygen on the raw surface after amputations, but Müller introduces the oxygen directly into the tissues through a stout cannula, and does not think it necessary to open up the phlegmon otherwise. It is this technic which Sudeck applied, pushing the cannula down into muscle tissue. The part swells up, but this subsides as the oxygen is gradually absorbed. The oxygen emphysema is still perceptible for

several days. As gangrene sets in so promptly from a gas phlegmon, he urges that no time should be lost before applying the oxygen. The German hospital trains, he says, now carry tanks of oxygen for this purpose.

54. **Chilblains.**—Schwering paints the region with tincture of iodin without preliminaries and then swabs the region, as soon as it is dry, with pure ichthyol. Then he presses cotton down into the sticky ichthyol until no more will stick. The stocking or glove protects the region, and the dressing is kept dry and left unmolested for from three to five days. Itching is relieved at once, and he has never known this treatment to fail.

55. **Sugar Solution in Treatment of Leukorrhea.**—Zweifel was impressed with the fine results reported by Kuhn and Bäumer from the use of sugar solution in treatment of gynecologic affections, as also with Magnus' success with it in 100 cases of acute or chronic osteomyelitis. Magnus and Bäumer use the sugar in substance, pouring from 150 to 250 gm. on the wound. Sudeck has applied the sugar treatment in sixty-six cases of leukorrhea of long standing, rebellious to all other measures. He used a 50 per cent. solution for rinsing the vagina or had the woman dissolve in the irrigator two tablespoonfuls sugar in two tablespoonfuls of hot water. When cooled sufficiently, this was allowed to flow into the vagina after she had settled down in bed for the night. This was repeated after eight or ten days, and over two-thirds of the women returned then to extol the improvement or cure.

In the few cases in which the sugar treatment failed to realize a complete cure, he ordered vaginal injection of a 0.33 or 0.5 per cent. solution of lactic acid after swabbing out the vagina with a 5 per cent. solution of silver nitrate. In thirty-eight cases in which this treatment was applied, there were no failures. The bacteria in the vagina were sensitized, as it were, by the nitrate so that they succumbed more readily to the action of the lactic acid. He orders the latter diluted with equal parts water; a teaspoonful of this to a pint of water for the douche.

58. **Treatment of Decubitus.**—Nordmann advises dry powders in treatment of decubitus unless there is much discharge when treatment as for any discharging wound is preferable. If there are complications or if the necrosis is extensive, nothing can compare with the continuous bath in treatment of decubitus. Not the least of its advantages, he remarks, is that the body floats to a certain extent in the water and thus further pressure on the region is avoided.

Münchener medizinische Wochenschrift, Munich

November 24, LXI, No. 47, pp. 2269-2300

59 *Cure of Spasmodic Twitching under Calcium Chlorid. (Ueber erfolgreiche Behandlung des Tic convulsif durch Chlorkalzium.) R. Emmerich and O. Loew.
60 Serodiagnosis of Small-Pox. (Komplementbindung bei Variola.) A. Klein.
61 Diphtheria Antitoxin in Treatment of Erysipelas. O. Polak.
62 Treatment of Syphilis. (Ueber Abortivkur, Spirochätenreste und kombinierte Behandlung der Syphilis.) W. Lier. Commenced in No. 46.
63 *Technic for Operations in the Field. (Einige Winke für das Operieren im Felde.) G. Perthes.
64 Treatment of Tangent Gunshot Wounds of the Skull. J. Oehler.
65 Bullet Entering Tissues May Be Deflected to Progress Sideways. (Ueber Querschlagerverletzung; Geschosswirkung des deutschen und französischen Spitzegeschosses.) J. Fessler.
66 Typhoid. (Zur Behandlung und bakteriologischen Diagnose des Typhus abdominalis.) L. Jacob.
67 Treatment of Deep and Threatening Emphysema in Skin and Soft Parts. (Haut-Weichteilemphyseme.) F. Kroh.
68 Simple Device for Locating Foreign Bodies. (Der Schwebemarkenlokalisator.) H. Wachtel.
69 In the Field Hospital. (Kriegschirurgische Erfahrungen in der Front.) W. Danielsen.

59. **Calcium Chlorid in Treatment of Tics.**—This last communication from the late Professor Emmerich gives a review of the literature on the treatment of nervous disturbance with calcium salts. Much evidence has accumulated that the functioning of nerves and muscles is dependent on the normal course of calcium metabolism. O. Loew has apparently established that the normal functioning of the cell is controlled by the calcium content of its nucleus, and others have shown that administration of calcium salts reduces to normal the exaggerated excitability of certain nerves. These and other data cited justify systematic calcium treatment of spasmodic twitching of all kinds, especially as we know that no gross anatomic basis can be discovered for *tic convulsif*, for example. The success from systematic administration of calcium chlorid in the two severe and chronic cases of *tic convulsif* reported amply confirm the above views. The first patient was a locksmith of 49, who for twenty years had suffered from chronic spasm of the muscles in the neck and right arm, and they had gradually increased in intensity during the last ten years until there were forty-five a minute and the muscles had become enlarged, while the man was becoming so exhausted that a fatal outcome was imminent. At each spasm the head was twisted around. Except for potatoes, he seldom or never took vegetables, fruit or milk, although his diet was plentiful, mostly eggs, meat and bread. The calcium content of this diet averaged only 0.721 gm., while the magnesia content was 1.113 gm. A solution of 100 parts pure crystallic calcium chlorid in 500 parts distilled water was ordered, a teaspoonful three times a day. By the fourth month there were only eight spasms a minute, and by the eighth month the tic was entirely cured and the strength regained. Equally good results were realized from the same treatment in a case of spasmodic rotation of the head from spasm of the splenius capitis. By the fifth month the patient, a letter carrier, was entirely free from his *tic rotatoire*.

63. **Field Operations.**—Perthes remarks that when an operation has to be done at once it is a comfort to realize that bacteria do not hop, like fleas, but can be kept out of wounds when direct contact is prevented. Important points to bear in mind are to use as few instruments as possible, sterilize by boiling when steam is not quick enough, use small aprons of rubber tissue at need, boiling them with instruments, sterilizing the hands with alcohol alone when there is no water to wash them. Rubber gloves are the main reliance in military surgery and protect against infection. A forehead lamp with powerful dry battery hung from the belt is a great assistance or an acetylene bicycle lamp. These lamps are too clumsy to be fastened to the forehead, but a reflector can be worn there.

Wiener klinische Wochenschrift, Vienna

November 19, XXVII, No. 47, pp. 1501-1528

70 *Continuous Bath in Treatment of Phlegmons. M. Riehl.
71 *Cholera and Vaccination. L. Arzt.
72 Conservative Treatment of War Phlegmons. (Die Kriegsphlegmone.) E. Suchanek.
73 Comparative Meteorology of Winter Seaside Resorts. E. Homa.

70. **The Continuous Bath in Treatment of Phlegmons.**—Riehl deplores that greater use is not made of the local benefit from the continuous bath in treatment of burns and extensive wounds. The pain of a severe wound is relieved at once and, as there are no dressings, the discomfort from change of dressings is avoided. The suppurating surface is kept constantly clean by being laved with the water, and he has seen many remarkably prompt cures under it. He has recently been applying this method for progressing phlegmons and has found it so effectual that he commends it to all when incision and draining do not arrest the progress of a phlegmon or when threatening general symptoms develop. The tub must be at least 110 cm. long; a blanket and some hair cushions will protect the body from contact with the metal. The water should be of the temperature most agreeable to the patient and, to keep the heat in, the tub should be covered with boards and blankets. It is not necessary to have a constant supply of fresh tempered water. The patient can be transferred to another tub after a few hours. He can be lifted on a sheet at need. The continuous bath is particularly useful for decubitus.

71. **Cholera.**—Arzt had 24 per cent. mortality in his twenty-five cases of cholera. He has the body rubbed perseveringly with spirit of camphor during the painful cramps and injects

salt solution, sometimes using a 1.5 per cent. solution. After the patient has thus been tided past the first collapse, he gives bolus alba systematically and repeats the saline infusion twice a day. Three of his patients had a pronounced eruption during the cholera. One of his attendants contracted cholera thirty-eight hours after the first anticholera vaccination. The second vaccination followed in five days, and two days later she developed cholera, but it ran a mild course with complete recovery in five days. One man was vaccinated during the incubation of cholera and except for vomiting he had no further symptoms of cholera. There were no serious by-effects from the anticholera vaccination in any instance.

Zeitschrift für Kinderheilkunde, Berlin

November, XII, No. 1, pp. 1-74

74 Radiology of Pleural Effusions in Children. E. Rach.
75 Effect of Friedmann's Tuberculosis Treatment in Children. H. Opitz.
76 Transformation of Energy and Metabolism in an Atrophic Infant. (Der Energie- und Stoffwechsel eines atrophischen Sauglings.) H. Bahrdt and F. Edelstein.

Zeitschrift für Urologie, Berlin

September, VIII, No. 10, pp. 739-778

77 *Hydronephrosis; Twenty Cases. W. V. Simon.

77. **Hydronephrosis.**—This communication from the University surgical clinic at Breslau reports that the hydronephrosis was certainly congenital in 13 and probably congenital in 2 more of the 20 cases reported. The ages ranged from 6 months to 67 years. There was some deformity in the kidney or its vessels in 3 of the cases,, and acquired causes were evident in 7, including 4 of trauma and 1 of obstruction from gravel. In 5 cases there was some concomitant affection, pleurisy, peritonitis, chronic pancreatitis, interstitial nephritis or severe arteriosclerosis. When the hydronephrosis is intermittent and not very serious and is evidently brought on or aggravated by movability of the kidney, attempts to restore the kidney to place without an operation are justified. Massage, bandages, etc., may answer the purpose. If there is no or very little functionally capable kidney tissue left, nephrectomy should be considered if no tumor or stones or abnormal vessels can be found to explain the hydronephrosis. The urine on the side affected may contain blood, but in 2 of the cases reported blood was found in the urine from both kidneys and albumin in 2 cases. All the abnormal findings in the urine may disappear during the intervals between attacks. The distended kidney in one case projected past the median line so far that the tumor seemed to be on the sound side. Generally a prolongation of the tumor into the kidney region can be palpated. Remnants of kidney substance may form knobby protuberances that can be palpated on the surface of the kidney. An important differentiating sign is the persistence of the area of dulness in the same spot on change of position.

He does not approve of exploratory puncture on account of the danger of infection, as, for instance, with echinococcus disease. The contents of the hydronephrotic kidney may resemble the fluid in an ovarian cyst so that puncture may prove misleading. The 20 cases are described in detail. Nephrectomy was done in 9; in 5 not until after the sac had been sutured to the skin and tapped. In 3 a conservative-plastic operation was done. One patient with an old (seven months) and infected hydronephrosis died soon after the operation and one from after-hemorrhage and embolism. In 3 other cases the hydronephrosis was probably infected, but 2 of the patients were cured; the outcome in the other case is not known. The conservative-plastic operation did not cure the hydronephrosis in one of the 3 cases and 2 were only improved in the 9 nephrectomy cases. The other surviving patients were all cured by the intervention.

Zentralblatt für Chirurgie, Leipzig

November 28, XLI, No. 48, pp. 1705-1720

78 *Symptoms in Genital Organs with Appendicitis. (Untersuchung auf Genitalsymptome zur Unterstützung der Diagnose bei Appendicitis.) O. Lanz.

78. **Genital Symptoms in Appendicitis.**—Lanz corroborates ten Horn's statement in regard to the pain elicited by pulling on the right spermatic cord when there is acute appendicitis (mentioned in these columns recently, July 4, p. 69). Lanz has found a number of other differentiating phenomena, as he illustrates by eight typical cases. Particularly in children, frequent and painful micturition is often an early sign of appendicitis. In both children and adults, when the forefinger is worked into the inguinal canal on the left side no appreciable resistance or pain is experienced, but on the right, if the appendix is inflamed, the muscles contract as the finger is introduced into the inguinal canal so that it is impossible to work it in deep, and if the patient coughs while the finger is in the canal, there will be local pain. The spermatic cord is also painful on pressure when it is pulled, and when it emerges from the canal it is swollen and tender. The cremaster reflex on that side is usually weak or abolished entirely with acute appendicitis. If the appendix is situated abnormally low, muscular rigidity and tenderness may be found in the lumbar region or may be detected through the rectum. Lanz has previously called attention to the relaxation of the sphincter muscle when the pouch of Douglas is being invaded. When there is actual suppuration in the pouch of Douglas, the sphincter may gape completely.

Zentralblatt für Gynäkologie, Leipzig

November 21, XXXVIII, No. 47, pp. 1425-1440

79 *Apparatus for Measuring the Roentgen Rays. (Das Iontoquantimeter; ein neues Messgerät für Röntgenstrahlen.) H. Meyer.

November 28, No. 48, pp. 1441-1464

80 *Mesothorium in Treatment of Cancer in Female Genital Organs. J. Braude.

79. **Apparatus for Dosage of Roentgen Rays.**—Meyer gives an illustrated description of the iontoquantimeter for measuring radiant energy. It is based on the physical phenomenon that air which is absorbing Roentgen rays becomes a good conductor for the electric current. The electrometer dial thus indicates the amount of rays being absorbed. It shows further, he explains, the surface energy and the degree of hardness of the rays, and thus he thinks we get an absolute measure of the radiant energy being applied.

80. **Mesothorium in Treatment of Cancer of the Uterus.**—Braude describes his experience in this line in 44 cases at Strassmann's gynecologic clinic since October, 1913. The reaction to the mesothorium exposures is as a rule proportional to the extent of the cancer, and thus serves as a basis for the prognosis. In 2 cases the reaction was so intense that the patients succumbed. The technic has been modified since so that an interval of several weeks follows each series of eight or twelve exposures in the course of two or three weeks. One is clinically cured of the 2 patients with inoperable cancer previously cauterized. In the 7 cases of inoperable recurrence after an operation, 2 of the patients are clinically cured; 2 have died and the outcome is not known in the other cases. Eight of the 10 operable patients are clinically cured and 3 of the 6 whose general condition forbade operative treatment. He bases the assumption of a clinical cure on the improvement in the general condition and weight as well as the local healing of the lesion. The invariable cessation of menstruation shows that the ovaries have felt the effects of the rays, and this gives grounds for assuming that the tissues between the ovaries and the mesothorium in the vagina have also felt the effect of the rays. In the bleeding inoperable cases, with fetid discharge and great weakness, the benefit from the mesothorium was beyond anything yet realized by any means outside of radiotherapy, and it has lasted for about a year to date in the typical case described.

Zentralblatt für innere Medizin, Leipzig

November 14, XXXV, No. 46, pp. 1001-1016

81 Heart-Block with Paroxysmal Auricular Flutter. (Fall von Herzblock mit paroxysmalem Vorhofflimmern.) J. S. Schwarzmann.
82 *Angina of the Abdomen. (Zur Symptomatologie und Therapie der Angina abdominis.) M. J. Breitmann.

82. **Angina Abdominis.**—Breitmann has had a number of patients with attacks of pain in the abdomen, meteorism and other symptoms closely analogous to those of angina pectoris and due to arteriosclerosis of the abdominal vessels or vascular cramp. The patients were usually men, including many syphilitics and others inclined to abuse of alcohol or tobacco. Relief followed escape of gases; they were probably the result of arteriosclerotic paresis of the intestine and ischemia interfering with peristalsis and absorption. Pallor, vertigo, syncope for a few minutes or hours, and the radiation of the pain to the heart and the left shoulder are characteristic, as also abnormal pulsation in the region of the abdominal aorta or epigastrium. The region of the abdominal aorta and a point toward the right on the line joining the ninth ribs were especially sensitive. The colic pains occurred periodically in various parts of the abdomen, generally at the hieght of digestion, and were accompanied by distention, fetid stools, eructation and vomiting as a rule. The free intervals might be months in length. The nocturnal attacks of pain were the most severe. The blood-pressure was often but not always high during the attacks. In one case the woman had had spasms of colic about once a year from childhood, but in the last three years they came oftener and were sometimes accompanied by vomiting of blood, but energetic palpation during and after the attacks never caused pain; ergot gave relief in this case. In some cases the trouble seems to involve the stomach and heart; some reflex action from the irritable stomach exerts a depressing or paralyzing influence on the already oversensitive and functionally weakened heart. Sudden death with consciousness unimpaired is common in this type, which is usually a syphilitic angina pectoris or abdominis. It is generally mistaken for a gastro-intestinal trouble until necropsy reveals the arteriosclerosis of the abdominal vessels. Especially with syphilitic disease of the abdominal aorta, the pain is intense and the patient can get relief only in the knee-chest position.

Gazzetta degli Ospedali e delle Cliniche, Milan

November 19, XXXV, No. 127, pp. 1957-1972

83 Artificial Pneumothorax. G. Breccia.
84 *Veronal Poisoning. A. Carafoli.

November 22, No. 128, pp. 1973-1988

85 Salvarsan and Neosalvarsan in Current Practice. F. Marinelli.

84. **Veronal Poisoning.**—A woman of 32 took 11 gm. of veronal with suicidal intent. When seen next day she was unconscious, the pulse 60, the respiration 18. The pupil reflexes were abolished and there was slight nystagmus, but there did not seem to be any sensation of heat, pain or contact at any point on the body for five days. Under repeated injections of ether, caffein and strychnin the woman roused the next day, but seemed confused, with hallucinations for three or four days more. There was no vomiting at any time or incontinence. The urine had to be drawn for the first two days.

Policlinico, Rome

November 8, XXI, No. 45, pp. 1569-1600

86 *Modified Bassini Operation for Inguinal Hernia. (Modificazione al metodo Bassini nella cura del laparocele inguinale.) O. Tenani.

86. **Modified Bassini Operation.**—Tenani's modification aims to reenforce the weak point in the abdominal wall by *superposing* the aponeurosis above and below. After the usual Bassini technic he sutures the internal oblique and transversalis muscles and the fascia transversalis to the posterior margin of the gap, and the upper flap of the aponeurosis of the external oblique. In making this fourfold layer he is careful to keep all the fibers in their natural position in regard to each other. Then he slits the margin of the aponeurosis across, on a line with the internal inguinal ring, slitting thus both the upper and lower flaps of the aponeurosis. The edges of the two flaps thus formed are superposed and sutured under the cord, drawing the whole toward the median line. In cases of an exceptionally large opening he resects some of the aponeurosis. He has operated with this technic in numbers of cases with permanently good results in all. The superposed flaps of aponeurosis form a stout pad around the cord. The opening left is more oblique than in natural conditions, which is an additional barrier against recurrence. These advantages far outweigh the drawback that the cord is left to run subcutaneously. None of his patients and none of Postempki's seventy-eight has had any inconvenience from this subcutaneous location of the cord, while all have been permanently cured of the tendency to hernia at this point. He gives the details of fifteen typical cases.

Riforma Medica, Naples

November 13, XXX, No. 46, pp. 1261-1288

87 Serodiagnosis of Cancer. (Sulla siero diagnosi dei tumori maligni col metodo della dialisi di Abderhalden.) A. Fulchiero.
88 The Luetin Test for Syphilis. (Valore clinico della reazione alla luetina) (Noguchi). E. Curti.

Tumori, Rome

September-October, IV, No. 2, pp. 129-256

89 Failure of Attempts to Inoculate with Alien Tumor Tissue. (Sui tentativi di trasmissione dei tumori per innesto eterogeneo.) R. Brancati.
90 Myxoma in the Heart of an Ox. U. Soli.
91 Fibroma of the Tunica Vaginalis. A. Avoni.
92 Modes of Spread of Cancer. (Intorno al vario modo di generalizzarsi del carcinoma. D. B. Roncali.
93 History of the Method of Treating Cancer by Autolysates of Tissues: Histogenous Chemotherapy. (Sulla oncoterapia biologica.) G. Fichera.

Grèce Médicale, Athens

November 1 and 13, XVI, Nos. 21 and 22, pp. 41-44

94 *Pain from Minute Uterine Fibromas during Pregnancy. (Des accidents douloureux qui accompagnent les petits fibromes utérins pendant la gestation.) G. Stavridès.

94. **Pain from Small Fibromas in Pregnant Uterus.**—Stavridès reports three cases in which fibromas—too small to be detected outside of a pregnancy—suddenly became enlarged and painful at the fifth or sixth month of pregnancy. Each could be felt as quite a large tumor sessile on the uterus and causing a slight reaction on the part of the peritoneum. Under repose and moist heat the disturbances subsided and the pregnancy progressed unmolested to term. Palpation three months later failed to reveal any trace of the tumor. It evidently had been located in the parenchyma, but under the stress of the pregnancy had parted the fibers in the wall of the uterus and forced its way to the outer surface. In a later pregnancy in one of the cases there was no disturbance from the minute fibroma, although it must still have been in its place in the uterus wall.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 2, pp. 105-172

95 Bacteriology of Lymphogranuloma. H. Verploegh and Others.
96 Treatment of Gangrenous Process in Lung by Intratracheal Injections of Medicated Oil. A. Binnerts.

No. 3, pp. 173-240

97 Pericarditis as Complication of Chronic Kidney Disease. D. Klinkert.
98 Use of Alcohol in Hospitals, etc. J. Kat.
99 Anatomy of the Transverse Sinus. I. C. Henkes.
100 The Fourth Disease; Four Cases. (De Ziekte van Dukes.) P. H. Kramer.

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101 *Thyroid Treatment of Dementia Praecox. N. J. Lemel.
102 Osteomalacia. W. M. van der Scheer.

No. 5, pp. 309-380

103 Heliotherapy of Tuberculosis of Bones and Joints at the Seashore. M. D. Andreae.
104 Melancholia. (Depressieve Toestandsbeelden.) J. van der Torren.

101. **Thyroid Treatment of Dementia Praecox.**—Lemel is quite encouraged with the results of thyroid treatment in the twelve cases in which he has given it a thorough trial. These patients were all between 17 and 24. The improvement persisted for five years in one case, and then there was a return of the former condition. In the other cases the improvement has persisted to date, but the interval since has been shorter. In one case the interval is still too brief for estimation of the outcome.

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CONCERNING THE RESULTS OF OPERATIONS FOR BRAIN TUMOR[*]

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The broad topic under discussion, the Surgery of Brain Tumors, has many aspects—so many in fact that merely to touch upon all of them would be impossible in a single session. I shall endeavor therefore to confine myself solely to that portion of Professor Küttner's all too brief paper which deals actually with the operative results attained in the Breslau clinic, and shall make no comment on other matters such as earlier diagnosis, Hirnpunction, choked disc, palliative decompression, callosal puncture, the technical features of a craniotomy and so on, though each of them is worthy of detailed consideration.

Any attempt to give a general survey of the subject would lead us as far as would a similar survey of, let us say, the surgery of abdominal tumors—and not long ago, when abdominal explorations were less common, elaborate reports which were made to include the statistical results of operations, were written on this far-reaching subject. A comparison of the operative results, even in the case of specific lesions of specific organs, at the hands of one or another surgeon is sufficiently odious, but when it comes to drawing statistical comparisons of operations for all tumors of all the tissues occurring in all parts of one of the body cavities the proceeding is futile. This is just as true of the intracranial chamber as it is of the abdominal cavity.

In the first place there is no uniform classification for the multiform growths that arise from the meninges and ependyma, from the central or peripheral nervous tissues themselves, or from the epithelial organs, pineal, pituitary and choroid, pertaining thereto. Furthermore, the situation of the lesion is often of importance even greater than its histological nature: whether it arises above or below the tentorium, in the right or left hemisphere, or is superficial or deep; whether it involves relatively "silent" areas or, on the other hand, areas important for life, as the repiratory centers, those important for intellect, for perception or expression, those important for sensation, locomotion, or co-ordination of movements; whether it produces symptoms confined to its immediate neighborhood or distant symptoms through oedema or cerebrospinal fluid obstruction; whether it has led to a great increase in intracranial tension, or the phenomena of this condition are absent; whether it affects special sense tracts or organs, particularly those for sight; whether it produces constitutional symptoms through disturbances on the part of the intracranial glands of internal secretion, and so on—all of these factors so modify the conditions attendant upon an intracranial growth as to make the bare enumeration of operative recoveries meaningless.

The mere feat of removing a tumor is not the only thing to be borne in mind, for this is a sorry accomplishment if the patient is left blind, palsied, aphasic, epileptic, or continues to be intellectually or physically crippled in any way. As Professor Küttner points out, the relief afforded by a well conducted decompression in the case of a tumor which occupies a relatively mute area may be as great and as enduring as when a growth is actually removed from a part of the brain of greater importance to the individual. Many tumors, moreover, are very slow growing and may reach an amazing size before any pressure discomforts or disturbances of vision occur, so that palliative measures, if undertaken at all, guard merely against some future contingency, and an effort to enucleate the growth, even if it is accessible, may be seriously meddlesome. Hence many tumor operations are undertaken only as a last resort, not alone because of tardy diagnosis, but through deliberate choice.

In view of all this there will necessarily be many individual standards for what is to be regarded as "recovery" from an operation for brain tumor. To some it is the actual extirpation of the lesion with preservation of life, but if a high grade of choked disc subsides with greatly lowered acuity of vision, one of the worst symptomatic complications of an intracranial growth persists; if cortical epilepsy continues after the growth is removed we can hardly be jubilant over its removal. If therefore a strict construction is put upon the word "recovery," as it should be, probably none of us see more than a possible 5 per cent. of our patients so "cured." If we can rest content with some persistence of symptoms after a tumor removal possibly an additional 10 per cent. are in this sense "cured," and the individual may lead an effective life, just as he may on recovery from a minor apoplexy which has possibly left some permanent trace of its occurrence. However, if satisfied with alleviation of suffering, preservation of vision and prolongation of life in relative comfort and usefulness, often for many years, certainly 50 or 60 per cent. of all patients can thus be helped. But in any event, even under the most favorable surroundings and with the widest experience and greatest skill it may be expected that 15 or 20 per cent. of the cases will continue helpless from an uninterrupted progression of symptoms and that a possible 10 per cent. will succumb to the operation, owing usually either to unavoidable loss of blood or to pressure implication of the respiratory center, which as all have observed is particularly apt to occur after subtentorial manipulations.

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[*] From the Peter Bent Brigham Hospital.

[*] An amplification of a discussion of Prof. Küttner's paper, "The Results in One Hundred Operations Performed on the Diagnosis of Brain Tumor," read before the Section on Surgery at the Sixty-Fifth annual meeting of the American Medical Association in Atlantic City, June 23, 1914.

Obviously, statistics collected from the literature in general are utterly worthless for the purposes which chiefly concern us—namely, the immediate operative mortality and the late results of these operations. Indeed even in the operative series of one individual or of one operative clinic, dependable information concerning these two matters is difficult to secure and a reliable estimate in percentages difficult to make.

A statistical presentation of the results of a comparatively uniform procedure, such for example as the amputation of the breast for malignant disease, becomes complex enough if we go beyond the simple percentage record of immediate surgical fatalities. An arbitrary three-year period of life without apparent return or continuance of the growth was once accepted as the standard of cure, but all of us have seen fatalities after ten or twenty years, or indeed in rare instances have seen patients carry a slowly withering breast cancer without operation for an equal length of time. A number of the patients in my brain tumor series have died from multiple cerebral carcinomatosis, one of them eight and another ten years after an operation for cancer of the breast which had been recorded as cured. Then too in the last twenty years we have seen not only a vast improvement in the breast operation itself, but a consequent readiness of patients to accept early intervention, so that the operative results of the past few years must necessarily be better than those of a decade or two ago; yet while we wait for the statistician to show this the operation will probably improve still further. Thus the prognosis of this year's cases may and should be vastly better than that of a similar group of cases ten or five or even three years ago.

So in brain tumor operations, our present statistics, if they lead us back a few years, must necessarily be built up from the results of operations upon patients with advanced disease, and what makes the matter worse, from the results of operations which in the light of our present knowledge were badly conceived and improperly conducted. Hence, for data concerning permanence of results we must depend on the figures of an era of relatively crude surgery for the figures of a recent era are instructive only from the point of view of immediate mortality. Some years ago a leading neurologist reported one of my cases of cerebello-pontine tumor as the single example in his experience of complete cure of a brain tumor with total disappearance of all symptoms following extirpation of the lesion. Three years later a second operation of the same type was necessitated owing to a reappearance of symptoms from continuance of the growth. In 1904 I removed from the right hemisphere in a young man a large tumor which proved to be a glioma. He remains, after ten years, absolutely free from symptoms, but will this be final in view of the nature of the lesion? In other words, from what we know of gliomata is the patient in a strict sense "cured" of his disease? Then how may we classify the large number of patients presenting a tumor syndrome but in whom no lesion has been certified by operation—lesions which for the nonce may have to be designated as pseudo-tumor cerebri? Often time alone can tell, and in my series cases thus catalogued are continually being reshifted to the true tumor group or elsewhere as further operations become necessary or post-mortem tidings are secured; but many of these individuals, with a competent decompression, live in comfort for years, even if in the end the lesion proves to have been a tumor. Further difficulties arise in connection with the statistical recording of individuals carrying lesions which will ultimately be fatal and yet in whom an immeasurable degree of palliation is afforded by a decompression or a partial tumor removal. I may cite one or two examples of patients who at the present moment are causing me anxiety.

Twelve months ago a physician traveled safely across the continent with a cerebellar lesion which had been permitted to advance so far that not only was he victimized by the characteristic cerebellar syndrome and by the severe headaches, vomiting and choked disc of an obstructive hydrocephalus, but there occurred every few days attacks lasting several hours, of agonizing suboccipital pain, accompanied by opisthotonos and Cheyne-Stokes respiration. In any of these seizures a fatal issue might have been expected. A wide suboccipital exploration was made, and after a ventricular puncture to lower the extreme tension the dura was opened and the edge of a vascular tumor was seen at the side of the right hemisphere. His condition was such as to preclude any attempt at extirpation, and as prompt and complete relief was afforded by this decompressive measure he returned home and actually resumed his practice for six months.

Some return of discomfort brought him back at the end of this period, and a large, exceedingly vascular tumor, the exact cytological diagnosis of which has led to some discussion, was incompletely enucleated from the hemisphere, with so persistent hemorrhage that finally a large piece of muscle was taken from his leg and implanted at the base of the bleeding cavity, after which, owing to his great exsanguination, a blood transfusion had to be made. Here was a close call to an operative fatality, but again his recovery was excellent, and though after this session a unilateral asynergia persisted he traveled and conducted his affairs in comfort.

Now, six months later, having been very well in the interval, he again returns, owing to threatening pressure discomforts. A further attack on the lesion can accomplish no more than the last and is even more likely to be fatal, yet it offers him his only chance of the few more months of comparative activity and freedom from headaches which he eagerly desires. Ultimately, on this basis, whether at the next or a later session, the case will have to be recorded as an operative fatality, unless I balk at what I conceive to be my duty; and without operation he may drag along with increasing discomfort for possibly a year or so.

The other patient to whom I shall refer had a large glioma involving most of the left temporal lobe, which sixteen months ago, after three more or less desperate operative sessions, was in a large part removed, fortunately without injury to her speech mechanism. Until the last few weeks she has been in flourishing health; she has gained 20 pounds in weight, has conducted her complicated household affairs and has traveled abroad. The growth proved to be a glioma, which appeared to be undergoing degenerative changes, and yet there is now a slight fulness at the seat of the operation. In view of her returning headaches should she, at some possible risk of life, be subjected to a further operation at this time?[1]

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[1] Since this writing both of these patients have been operated upon with a fatality from hemorrhage in the first and a good recovery in the second after an extensive tumor removal.

How shall cases such as the above be classified in the event of death at some future operation? My series contains many examples of this nature with a fatality after a third or even a fourth operation, months or years intervening. From an operative standpoint some credit, it seems to me, should be given for these long periods of release, and hence my analyses will include not only the mortality percentage for the number of patients but also the percentage for the number of operations performed. This is apparently a matter which concerns my clinic more than those of others, for elsewhere, as we shall see, patients are far less often reoperated upon.

Only within the last few years has access through publication been given to the surgical records concerning brain tumors in institutions where comparatively large numbers of these cases have been operated upon. Of the two reports most worthy of consideration one was presented before the London International Congress by Howard H. Tooth[2] and was prepared from the records of the National Hospital during the ten years from 1902 to 1911 inclusive. It is an elaborate study of 265 cases operated upon by Victor Horsley and his colleagues. The other, by von Eiselsberg and Ranzi,[3] presented in the same year before the German Surgical Congress, gives an analysis of 168 cases operated upon in the former's clinic in Vienna, covering a period also of about ten years.

Unfortunately the operative statistics of 109 operations for "tumors of the brain substance" given in Fedor Krause's[4] recent volume and prepared by his assistants are too meagre to be of any great value for a comparative study and are a little difficult to interpret even in their rough details. Finally, those now presented to us by Professor Küttner from his clinic in Breslau, covering a period of six and a half years, comprise 104 surgical interventions in 100 patients with tumor or presumed tumor.

Unquestionably the striking thing in all of these reports is the high operative mortality—a mortality which is too great, I think, to be glossed over by reference to the distressing alternative of the disease left to pursue its own course. In the Breslau series the mortality was 45 per cent., and Professor Küttner estimates the Berlin mortality at 50 per cent. and that of the Vienna clinic at 38 per cent. Tooth's figures, moreover, would lead one to believe that the London operative mortality has been equally staggering.

But here again we are confronted with different standards and personal equations. Tooth in particular has endeavored to fit his analysis to different conditions by tabulating the results of the various operations for the various lesions in the various anatomical subdivisions of the brain. As he admits, the analysis becomes so involved as to necessitate an appendix in which the histories of the 265 cases are individually abstracted; and the tables fail to show the great benefit which the operation has afforded in very many of the cases which fall in the columns of the late or remote fatalities. Cases such as the two of which I have here briefly given the story, if now operated upon without another temporary success would on this basis fall among the immediate operative fatalities, with no credit for the year's relief.[5]

One might indeed assemble his cases into an infinite number of subdivisions—into those fatal at a first operation, those which recover but are unquestionably made worse; those which recover, unaffected and unrelieved; those which recover and in varying degrees are relieved; those which after a period of relief succumb to a second operation; those which remain permanently relieved; those which are explored; those simply decompressed; those in which a partial or total extirpation is carried out—and so on for each part of the brain until we are too addled to figure.

In giving statistics on such a complex subject as that under consideration no one quite knows what the future reader may be seeking. Thus, for our present purposes, the data given by Krause is insufficient. I cannot quite make out whether his tabulated 109 operations include merely all of the cases in which the tumor has been certified by operation or after death, or whether they include also the cases subjected to palliative measures alone. The number surely does not represent his entire series, for in his list of tumors the syphilomas, for example, and the various cysts which he must have encountered do not appear, and an identification of the lesion in 81 cases out of 109 operations is surely a very high percentage. He records that in 19 cases a one-stage operation was planned, with 20 per cent. mortality after the first stage and 20.85 per cent. (?) mortality in the remaining 72 cases which came to a second stage. If these figures are correct it would give an operative mortality of something over 40 per cent. Most of the fatalities were attributed to cerebral softening, to hyperthermia and to pneumonia. This it is most difficult for me to understand, for certainly hemorrhage and respiratory failure from medullary implication, and what we loosely designate as shock, is what most of us chiefly apprehend.

In Eiselsberg and Ranzi's admirable study of their 168 cases, which include a greater number of hypophysial tumors than occur in the other series mentioned, there were 61 operative deaths, 20 from meningitis or sepsis following a cerebral prolapse; 31 attributed to shock or respiratory failure, and the remainder to pneumonia or other complication—an operative mortality of 38 per cent. Professor Küttner states that 45 of his 100 patients died of the operation and its complications, though from what cause he does not say.

Finally, the operative mortality for the 265 cases at the National Hospital is recorded by Tooth as 53.3 per cent., but as I have pointed out and as he himself emphasizes, these figures do not actually convey the impression which they should, for among the cases recorded as fatal are included, to quote from him, "many positive surgical successes, some almost brilliant considering the circumstances, and followed by relief of pain, improvement in sight and mental state, and prolongation of life." It would be illuminating could we have from Horsley or his surgical colleagues an analysis of these same cases from the point of view of the operator. It is possible, however, to gather from Tooth's tables the fact that about 52 cases (20 per cent.) died within a few hours, and 32 (12 per cent.) some days after the operation, making an operative mortality of approximately 32 per cent.[6]

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[2] Tooth, Howard H.: Transactions of the Seventeenth International Congress of Medicine, London, 1913, Section VII, Surgery, Part 1, pp. 203-299.

[3] Von Eiselsberg and Ranzi: Ueber die chirurgische Behandlung der Hirn- und Rückenmarkstumoren, Verhandl. d. deutsche. Gesellsch. f. Chir., 1913, xxxii, 515-673.

[4] Krause, Fedor: Chirurgie des Gehirns und Rückenmarks, 1911, p. 572.

[5] As a matter of fact I am greatly surprised that in the series of cases recorded from these four clinics there are so comparatively few secondary operations—only 4 in Professor Küttner's 100 cases and only 17 in the 265 cases from the National Hospital (6.4 per cent.)—whereas in our clinic the percentage of secondary operations is much higher (14.6 per cent.), due doubtless to several factors—to the proclivity toward palliative decompression from a desire to postpone radical measures until we are pretty sure of a localizing diagnosis and to the readiness to reoperaate on recurring lesions.

However these operative results are to be interpreted, we must all feel hugely indebted to Dr. Tooth and to Professor von Eiselsberg for their invaluable reports, and it becomes incumbent upon others of us to have similar analysis made and published, with the inclusion of case record abstracts, so that subsequent readers with an interest in the subject may cull from them what they will. On this present occasion I can do little more than Professor Küttner has done, namely, to assemble the bare facts to which I have access as simply as I am able.

My own experience comprises 334 cases in my Baltimore tumor series and 142 cases observed in Boston during the past 18 months since the opening of the Brigham Hospital. The number of cases, therefore, for a period of about ten years approximates that from the National Hospital, where 500 cases were the basis of Tooth's studies, 265 of which were operated upon. Of my series of 470 cases about 350 have been subjected to one or more cranial operations. Without a long investigation, impossible with the data at hand, I cannot give the mortality figures relating to the Baltimore series, which, however, when recorded will be of importance largely from the standpoint of permanence of relief. Out of the Boston series of 142 cases, 37 of which were hypophysial tumors, 136 have been operated upon, and concerning these cases the following facts may be given.

To avoid too great detail the growths will be divided into those of the cerebral (supra tentorial) chamber, including the hypophysial cases, and those of the cerebellar (subtentorial) chamber, the pontine tumors being here included. In the list I have not included as "operations" either callosal punctures for the relief of secondary hydrocephalus or the many ventricular punctures performed for diagnostic purposes. Moreover, operations conducted in two or three stages, though necessitating reanaesthetization are recorded as one procedure. Only when a second operation has been undertaken after a long interval is it recorded as another operation.

A. THE SUPRATENTORIAL LESIONS

1. *Cerebral Tumors.*—Of 55 cases listed as cerebral tumors proper, 48 have been operated upon 55 times as follows: subtemporal decompression for an unlocalizable growth, 13; an osteoplastic exploration combined with a decompression in the presence of an irremovable growth or of negative findings, 18; an osteoplastic exploration with disclosure of the lesion and its partial or total removal, or a cyst evacuation, 24. Four of the 48 patients have suffered operative deaths as follows:

(1) A patient in extremis, with diabetes and in status epilepticus, with rapidly recurring seizures of a focal character: exploration without anesthesia; negative findings: continuance of seizures: death in twenty-four hours: a small subcortical glioma at autopsy.

(2) A fatal hemorrhage from the longitudinal sinus on the attempted removal at a second stage of a large endothelial sarcoma involving bone and sinus: closure: death in one hour. (A prompt transfusion might have saved this patient.)

(3) A fatality a few hours after the extensive removal, for the second time, of a recurrent parietal glioma.

(4) Exploratory craniotomy revealing multiple tuberculomata, with early fatality (7 days).

Strictly speaking only the second and third of these fatalities was precipitated by the operation. In the other two death without operation was imminent, and in this connection it may be noted that four of the unoperated patients in the series died in the hospital soon after admission and before studies preparatory to operation could be made.

2. *Tumors of the Hypophysis or its Neighborhood.*—Owing to a secondary hypophysial involvement, a large number of the basal and interpeduncular tumors have been included in this group, together with the primary pituitary tumefactions, making 37 cases in all. In these 37 cases 42 operations have been performed as follows: subtemporal decompressions, 20; transsphenoidal operations on the sella with decompression, 2, with partial extirpation of the lesions, 15; osteoplastic frontal operations, 5. There have been two deaths:

(1) A fatality from cerebral compression eighteen hours after a transsphenoidal operation, the third operation on this same individual after long intervals.

(2) The removal in toto of an interpeduncular tumor at a second stage by the frontal route.

3. *Pineal Tumors.*—Owing to our interest in matters relating to the ductless glands this small group is recorded separately. There have been four cases, two of them certified by autopsy, the patients dying in the hospital without operation. One of the living cases was explored with negative findings.

B. THE INFRATENTORIAL LESIONS

1. *The Cerebellar Group.*—There have been 32 patients, all but three of whom have been operated upon, and all told there have been 36 operations. All of the procedures have been of the same extensive type, with a "crossbow" incision and a bilateral exposure with posterior removal of the foramen magnum, often combined with a ventricular puncture and occasionally with removal of the arch of the atlas. In only one instance was the operation conducted in two stages. In 10 of the cases the lesion has not been exposed and its situation remains uncertain; in 12 it proved to be intracerebellar; in 7 it was extracerebellar.

There were 18 explorations which were abandoned as decompressions, for in 16 of them either no lesion was disclosed or if disclosed and presumably operable the patient's condition precluded further manipulations (no fatalities), and in the other 3 a large posterior and mesial, and obviously an irremovable tumor, presented itself (all three cases fatal).

There were 17 partial or presumed total extirpations or cyst evacuations, 2 of them cases which had been previously explored, with negative findings, 7 of them cases in which an earlier partial extirpation had been performed. There were two deaths from the operation.

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[6] A review of the case abstracts leads to the impression that 99 of the fatalities are attributable to the operation (an operative mortality of 37.3 per cent.), whereas 11 others are questionable. There were 17 more or less acute and fatal infections; 14 fatalities associated with a recorded fungating hernia and discharging wound, and a number of cases of like nature without definite details, showing that there were at least 31 cases of fatal sepsis out of the 99 fatalities, making a percentage of about 30 due to this cause.

Thus in the 29 cases subjected to operation there have been 5 fatalities attributable to the operation (a 17 per cent. case mortality and 13 per cent. mortality for the 36 operations). The fatalities may be detailed as follows:

(1) A young girl with profound pressure symptoms and a cerebellar syndrome had a sudden cessation of breathing the night of her admission. Dr. Bagley attempted an emergency decompression without success. At autopsy a large enucleable tumor was found lying between the two cerebellar hemispheres and flattening the medulla.[7]

(2) Exposure of a large mesial posterior vascular tumor: respiratory cessation on the table: autopsy: a vascular glioma flattening the medulla.

(3) Exposure of a pial endothelioma with conditions practically corresponding to those in 1 and 2:[8] early death (8 hours) from respiratory failure.

(4) A young girl first decompressed (Baltimore series) in 1910; subsequently a partial glioma enucleation by another surgeon (1912); return of symptoms, 1914: successful enucleation of a huge glioma occupying most of the subtentorial chamber. Death on sixth day from streptococcus meningitis.[9]

(5) A young boy, first decompressed (Baltimore series) 1910: subsequently in 1912 a partial enucleation of a glioma of the right hemisphere: return of symptoms with bizarre paralyses, 1914: fatal issue two hours after further enucleation of the large recurrent growth: autopsy: gliomatous extension throughout the entire spinal canal and over base of brain.

3. *Pontine Tumors.*—Five cases have been diagnosed as pontine gliomas—one certified by autopsy after some months. Four of the cases have been operated upon without fatality—and, as may be added, with practically no alteration in the condition. In 3 a subtemporal decompression, and in one a suboccipital exploration, was performed.

C. THE PSEUDO-TUMORS

At present 23 cases are recorded under this diagnosis, and of this number 11 have been operated upon owing to pressure phenomena. Two or three cases originally so grouped have since been shifted to the true tumor list (in one a glioma was disclosed at autopsy, in two others a glioma was found at a second operation). A few others have been removed from this group, as a late examination has shown an abscess or vascular disease, or cerebral lues, or a meningitis serosa, which simulated tumor. A number of other cases not operated upon as yet will doubtless in time come to operation. Hence this particular group is difficult to handle, and probably "questionable" rather than "pseudo" would be a better group designation.

There have been no fatalities in this group, in which there have been 4 exploratory craniotomies combined with a subtemporal decompression, 4 subtemporal decompressions, and 3 suboccipital explorations and decompressions.

A summary of these cases may be tabulated as follows, showing a case mortality for the 130 patients operated upon of 8.4 per cent. and the operative mortality for the 149 operations of 7.3 per cent.

SUMMARY OF CASES

	Cases Observed	Operated Cases	Times Operated	Operative Fatalities
Supratetorial cases	55	48	55	4
Hypophysial cases	37+	37	42	2
Pineal cases	4	1	1	0
Cerebellar cases	32	29	36	5
Pontine cases	5	4	4	0
Pseudo-tumors	23	11	11	0
	156	130	149	11

The following assemblage of the 149 individual operative procedures for the entire series may be given.

Subtemporal decompressions, 41 (no fatality).

Osteoplastic craniotomies combined with cerebral decompression, 28 (3 fatalities).

Osteoplastic craniotomy with attempted partial or total removal of the tumor 24 (2 fatalities).

Transsphenoidal operations for hypophysial tumor, 17 (1 fatality).

Suboccipital exploration and decompression, 22 (3 fatalities).

Suboccipital operations with attempted partial or total removal of the lesion, 17 (2 fatalities).

In this group of 130 surgically treated cases the 70 certified lesions have been as follows. Glioma and gliomatous cyst, 27 (cerebral 18, cerebellar 9); endothelioma, 7 (cerebral, 2, cerebellar, 5); angioma (endothelial ?), 2; sarcoma, 1; carcinoma (metastatic), 1; syphiloma, 4; tuberculoma, 4; osteoma, 1; echinococcus, 1; adenoma, 17 (hypophysial, 15, pineal, 2); interpeduncular mixed tumors, 5. It may be added that a few of the lesions which are histologically difficult to classify have been put with the gliomas, on the basis of the finding of a few glioma fibrils.

In order to show the type of cases we have included and of those we have excluded from the operative fatalities I may mention the 3 tuberculous cases. In one of them, recorded as a fatality, the patient was in extremis, with pulmonary tuberculosis, but owing to his intense discomforts an operation was undertaken —an exploratory craniotomy which better judgment would have made a simple decompression. There was great tension of the hemisphere with extensive tuberculosis radiating from a large tuberculoma—an inoperable condition. He died 7 days after the operation. The two other patients, not included with the operative fatalities though both of them subsequently died, were children. In one of them a simple suboccipital decompression was performed with no apparent change in the condition. A few weeks later he was removed to his home, where death occurred shortly afterwards, and a fragmentary autopsy disclosed a cerebellar tubercle. The other, a child of 3, died in the hospital three months after a successful extirpation of two large tuberculomas from the left cerebellar hemisphere. The postoperative conditions were perfect, with great improvement in the child's condition, but after a month's time a progressive hemiplegia set in, with ultimate death and the disclosure at autopsy of a third tubercle in the left crus cerebri and a basilar meningitis.

Cases of this sort, I am aware, if placed among the surgical fatalities would considerably increase their number, but even if they are to be included I nevertheless feel that the recorded mortality percentages from foreign clinics convey an absolutely erroneous idea of the immediate surgical risks of brain tumor operations. I can hardly imagine an optimism sufficient to carry a surgeon into a class of work in which one out of every two or three patients dies obviously from one's intervention, well intentioned though it may be. It is possible that we have estimated our percentages on a different basis, for otherwise I can hardly account for the discrepancy between the figures which I have given and those of the major foreign clinics where these operations in considerable number are undertaken. Still another explanation lies in the fact that these Brigham Hospital figures represent an experience of only the past 18 months, whereas the figures from Breslau, London, Berlin and Vienna comprise the experiences, in some cases, of a decade and reach back to a time when for many reasons the expectancy of life after such procedures was doubtless less than it is today.

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[7] The case might justifiably not be included among the operative fatalities. However, I have once succeeded in saving a patient under similar circumstances, with resumption of spontaneous breathing on the operating table after evacuation of a cerebellar cyst, *45 minutes after the sudden cessation of respiration in the ward!*

[8] It is unusual to meet with three cases like the above in a small series. But for their situation the growths would have been enucleable, and though lying largely within the cerebellum they were in a strict sense probably all extracerebellar.

[9] I grieve to record this my single fatality from meningitis in the entire series. It was a long performance and the operating room orderly who held the head during the preliminary preparations was ill and was confined to bed the following day with a streptococcus throat and scarlet fever.

However this may be, I nevertheless feel that the effects of concentration of work show themselves in our results, which depend so greatly on such details as perfection of anaesthesia, scrupulous technique, ample expenditure of time, painstaking closure of wounds without drainage, and a multitude of other elements, which so many operators impatiently regard as trivialities. Certainly infections cannot be attributed to the intervention of the devil but must be laid at the surgeon's door. We have had no example of wound infection of any kind with the single exception of the wildfire case of meningitis which I have recorded, and such a thing as a fungus cerebri after an operation is unknown in our experience, owing I think to the careful closure of the galea with interrupted silk sutures which is invariably practiced, for on this buried layer the strength of the wound depends, the skin sutures being removed usually in 48 hours. Krause has the enviable record of no instance of meningitis in his series, whereas a great opportunity for improvement is shown by the 10.5 per cent. mortality from meningitis in the Vienna series and the still higher percentage (11.7 per cent.) of deaths recorded as due to sepsis at the National Hospital.

After all this wearisome and embarrassing comparison of operative statistics I may be permitted to return to the theme of my opening paragraphs, where it was pointed out that the discussion of this whole subject would cover too large a ground, including as it does all tumors of all kinds in all parts of the cranial chamber. The time has come when for proper advance we may well devote our analytical studies of operative results to specific types of lesions in specific localities, as, for example, the hypophysial tumors, the cerebello-pontine lesions, the cerebellar gliomas, the endothelial tumors, tumors of a metastatic or infectious origin, and so on. This I have already attempted to do, in a paper printed in this journal,[10] with the hypophysial cases, which henceforth may well be excluded from the "brain tumor" series. Only in this way may we arrive at a better understanding of what actually are the probabilities of recovery from an operation of a given type upon a particular lesion.

Confused as one may remain in regard to the results from this or that clinic when the entire subject is considered, when it is brought down to a single topic a comparison is much clearer. Let us, in illustration, consider for a moment the cerebello-pontine (acoustic or lateral recess) tumors. Long ere this the general principles of attack upon these supposedly enucleable and easily diagnosed tumors should have been a matter of common knowledge. But there is no agreement as to whether there should be one or two stages, a bilateral or a unilateral exposure, an osteoplastic operation or otherwise, an approach through or to the side of the cerebellum, an attempt at a total enucleation or not, drainage of the wound or otherwise, and so on. It is a procedure accredited with a very high mortality. In 24 such operations Krause has had 20 fatalities; von Eiselsberg in 17 cases lost 2 after a first-stage, and of the remaining 15, 10 of the 11 in which there was an attempted tumor removal died of shock; 24 of the 36 cases operated upon at the National Hospital died from the effects of the operation (9 after a decompression, 15 after a partial removal, 5 of sepsis).

This gives for the 77 cases in the three clinics a 72.7 per cent. average mortality, which is of course appalling for an operation upon a lesion possibly the easiest to localize of all intracranial tumors; and as Tooth says, the only hope of lowering the mortality in these cases is by a modification of the surgical procedure. The direction of this modification lies, I think, in performing these suboccipital operations with a bilateral exposure and in one instead of two stages; in carrying through the elaborate approach to the lesion with complete haemostasis, even though it means a two hours' labor; in lowering tension by an occipital puncture of the lateral cerebral ventricle; in removing the posterior half of the foramen magnum, and possibly, in case of great cerebellar herniation through the foramen, the arch of the atlas as well; in being content, in view of the obvious impossibility of a total enucleation of the growth, entangled as it is in the nerves and vessels of the lateral recess, with the mere splitting of the comparatively non-vascular lesion with subsequent scooping out, on each side, of as much tumor tissue as possible, leaving its capsule in place; in accurate closure of the wound in layers without drainage; in leaving the patient in the face-down position on the table if necessary for hours should there be any question of threatened respiratory difficulty; in the willingness to give an entire morning of three hours at least to such an undertaking.

My own series, going back ten years, contains 13 of these cases which have been certified by operative exposure and 17 cases in which the diagnosis of a cerebello-pontine tumor was made but in which the operation was concluded as a decompression, short of laying bare the lesion. It is possible that there may be still other unrecognized cases, but these are possibly offset by others again in which a previous diagnosis of a cerebello-pontine lesion has been proved erroneous by the finding of an intracerebellar lesion at a second operation, I having had several experiences of this kind. None of the 17 cases with a decompression alone have been fatal. There have been 4 fatalities in the 15 operations on the 13 patients with a certified lesion; one of them from a pneumonia following my first operation of the kind—a sorry attempt ten years ago—and the three others from bulbar symptoms after more or less extensive fragmentary enucleations. Though the series is admittedly small, this gives a mortality for the 13 certified cases of about 30 per cent., and if the suspected cases are included, of only 13 per cent. Indeed, we do not share the view, which seems to be held in other clinics, in regard to the extreme surgical risks of subtentorial operations in general, though admittedly they are greater than in other intracranial procedures. Still, I realize fully that we may be riding to a fall, and that our cases may have been brought to us earlier and thus the operations on the average have thus far been 50 per cent. easier and less hazardous than in the other clinics.

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[10] Surgical Experiences with Pituitary Diseases. The Weir Mitchell Lecture, The Journal A. M. A., Oct. 31, 1914, p. 1515.

Unquestionably the general results of the efforts on all sides to give relief by surgical measures to individuals suffering from tumors of the brain are perceptibly improving and the mortality percentage is being constantly lowered. There are two underlying reasons for this. One is the great improvement in technical methods of performing these admittedly difficult operations since the days when von Bergmann gave his pronouncement of their hopelessness except in the case of tumors of the paracentral zone. Disastrous have been the attempts to apply to intracranial procedures the same rough surgical methods which the abdominal viscera and their coverings tolerate but against which the central nervous tissues rebel. Surgical manipulations of an entirely different order from those permissible elsewhere in the body are essential to success in intracranial performances, and they demand special training.

A second and equally important reason for the recognized improvement in neurological operations concerns the changed attitude of the surgeon toward the subject, for as I have frequently emphasized he should be able to make his own neurological examination. No notable advance was ever made along any line of manipulative handicraft so long as the operator remained merely the tool to execute a procedure directed and conceived by another who alone assumed the responsibility of a diagnosis. The neurologist has been as quick to appreciate this as has the internist in the case of surgical performances for the disorders of the abdominal organs, which were once his special domain.

There is a prevalent view, due undoubtedly to the sorry experiences of the past and the bungling results of the untrained at the present time, that all of these operations for brain tumor should be undertaken only as a last resort when the clinical features of the case have become outspoken and the sorry plight of the victim can hardly be made worse, whatever the outcome of an operation. History repeats itself. There was a similar chapter in the story of the appendix, the gall-bladder, the pylorus and the thyroid, to give only some very modern instances. Still, if an intracranial exploration is attended by extraordinary risks this is indeed a justifiable view; so that the first thing that one must be able to assure his patient, his patient's councilors and himself, is that there is no great hazard in an exploration and a probability of improvement even when no tumor is revealed, or one which no attempt should be made to remove. This, indeed, is more than can be said of most of the purely exploratory operations performed for new growths involving the abdominal organs, for at best the closure of a laparotomy wound, in the face of an inoperable lesion, leaves the patient's condition unaltered, whereas a properly conducted craniectomy is in itself often beneficial.

There are certain things which make this assurance possible. Far from the least important is the smooth administration of the anaesthetic by one who is specially trained for its administrations in these difficult cases. Again, these procedures should never be attempted in unaccustomed surroundings: it is far safer to transport an ill patient to a well organized surgical machine than it is to operate awkwardly with a makeshift team in unaccustomed surroundings. The technical steps are delicate; the performances are time-consuming; wounds must be left dry before closure and closure must be without drainage; patients if in a critical condition may needs remain unmoved on the operating table for many hours; a donor should be in readiness for transfusion should there be an excessive loss of blood; absolute perfection of wound handling and wound closure must be observed, with early removal of sutures, for in many cases of tumor removal two, and even three or four, stages must be anticipated. Then even at home one cannot justifiably crowd difficult and responsible operations of this type into a busy operating schedule, even if they could be done with greater speed than we at least feel justified in making. Some of our neurological friends have long placed more emphasis on speed than on care, and indeed from the onlookers' seats these detailed performances must often seem utterly tedious, but it is a familiar adage that the grandstand is a poor place from which to conduct the play.

I have amplified this discussion to an unexpected and possibly unnecessary length in my attempt to register the conviction that to group together all the operations for all tumors which arise anywhere in the cranial chamber and to consider percentages gained by such a process, is largely a waste of time and a possible abuse of figures. Unquestionably the time has come for us to concentrate upon individual lesions in individual situations if, through comparative studies, we are to increase our technical facilities and improve our mortality results.

Specialization with some knowledge of neurology, skilled assistance—for intracranial operations are not star performances—familiarity with the safe and respectful handling of the central nervous tissues, which is best acquired by the experiences of the experimental laboratory, and painstaking, scrupulous technique, are the chief elements of success. An observance of these things will not make more tumors accessible, but it will permit the removal of those that are accessible to be more often accomplished and render those that are not, capable in a larger percentage of cases of being safely palliated.

The Peter Bent Brigham Hospital.

The Unbalanced Antivaccinationists.—There is something about the antivaccination propaganda which appeals with irresistible force to a certain type of unbalanced mind. Of every ten letters written to the *Journal* against vaccination, six belong to a well-marked type. They bristle with adjectives, mostly uncomplimentary ones. They repeat certain phrases over and over again. They overflow with statistics of things that never happened. They impute the most evil motives to all who differ from their pet "ism." Their argument, if present at all, runs in a circle: "I hate vaccination because it is poison, and I know it is poison because I hate it." They show an utter disregard of facts, they ignore the plainest evidence that conflicts with their views, and put absolute faith in the wildest, craziest tales that agree with their preconceived notions. The writers of these epistles may not be insane, doubtless are not, in the usual sense of the word. Neither are they persons whom a thoughtful citizen would choose as trustees of his estate or guardians of his children. They do not stand alone in their opposition to vaccination—if they did, the task of sanitary officers would be easier than it is—but they do furnish a large part of the misdirected energy whose sole effect is to perpetuate a loathsome and dangerous plague.—Chicago *Daily Journal.*

THREE CASES OF EXTRAPERITONEAL CESAREAN SECTION*

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Probably none of our operative procedures has had a more rapid growth and development than cesarean section. Within the brief span of ten years it has undergone a wide extension of its scope and radical changes in its technic. It was formerly applied only as a measure of last resort and was altogether limited to cases of dystocia due to extreme contraction of the pelvis. When the suggestion was first made to perform cesarean section in placenta praevia, it provoked rather strong opposition (Ehrenfest[1]), but the indication has, of late, been upheld by many writers (Bumm, Kroenig, Nagel,[2] Kohlmann[3] and others). The therapy of eclampsia is still a mooted question, yet those who advocate active intervention and include cesarean section among the means of quickly evacuating the uterus are by no means less numerous than the adherents of an expectant mode of treatment (Peterson[4]). Craniotomy has properly been denounced as an unjustifiable procedure except in rare instances, and in proportion cesarean section has been brought to the fore. The induction of premature labor in cases of moderate contraction has, in hospital and clinical practice at least, shown considerable disadvantage and the future fate of the infants has been so far from satisfactory that cesarean section has been advocated as a preferable alternative. Then, we find scattered in literature occasional indications for cesarean section, such as premature separation of the placenta (Küttner[5]), uncompensated heart disease (Kreiss[6], Barris[7]), edema and varicosities of the vulva (Brunet[8]), prolapse of the parturient uterus (Warren[9]), complication with ovarian cyst (Broadhead[10]). And finally, it has been claimed quite recently (Newell[11]) that many modern women, weakened as they are by the deteriorating influence of hypercivilization, can but badly stand the strain even of a normal labor and have to pay dearly for the privilege of motherhood by a prolonged, if not lifelong, invalidism, but that such patients will undergo and recuperate rapidly from a cesarean section.

This amazing multitude of new indications can be explained in part by the fact that, since Saenger, in 1882, presented us with the technic of the "classical" cesarean section, modern antisepsis and asepsis have steadily reduced the mortality of this operation until it reached its low water mark of 12 per cent. in 1904 (Nicholson[12]). In selected cases the mortality has sunk as low as 2 per cent. (Boyd[13]), and in the hands of particularly experienced operators has become still further diminished to a negligible quantity.

But where there is much light there must be shadow as well, and as the number of cesarean sections increased, certain undesirable after-effects became apparent. The unsightly abdominal scar with its ever-present tendency toward hernia was, perhaps, the least untoward sequel. Much more serious was the frequent, nay, the almost constant, occurrence of postoperative adhesions, the unintentional ventrofixation of the uterus, with its train of annoying symptoms, the possibility of ensuing miscarriages, or the danger in future deliveries from the pathologic immobilization of the uterus.

Thus it was that a number of modifications came into being, among which the "high" incision of Davis[14] has more recently become popular, because it was claimed that adhesions could thereby be prevented.

The classical cesarean section and its modifications had this premise in common, that the case to be operated on had to be "clean," that is, the membranes had to be intact or but quite recently ruptured and previous examinations and attempts at delivery had to be strictly avoided. Now and then fortune may favor with impunity one who ignores these precautions,[15] but, as a rule, trespassing is quickly followed by infection and death.

There still remained, then, a large number of so-called "unclean" cases in which infection was already established or the precautions enumerated had not been observed, or else "suspected" cases in which there was some doubt as to the proper preoperative handling. It was for just such cases that Frank of Cologne, in 1907, invented a new method of cesarean section called "extraperitoneal," which was in all essentials identical with an operation originated by Thomas of New York in 1870, but since fallen into oblivion. The principle of the new method was to make the incision into the lower uterine segment instead of into the fundus, and to exclude carefully the operative field from the rest of the peritoneal cavity. That Frank's procedure filled a long-felt want and was published at the psychologic moment was shown by the stormy enthusiasm it kindled abroad and the large number of more or less radical modifications. An interesting and exhaustive résumé of the development of extraperitoneal cesarean section has been written recently by Nicholson.[12] For us it may suffice to say that extraperitoneal cesarean section did not fulfil the hopes originally placed in the new procedure. Patients already infected could not be saved by it. Brilliant results, however, were obtained when the operation was performed on "suspected" patients, and even more so when it was employed in aseptic cases.

It will not be necessary to concern ourselves in detail with the numerous modifications of technic. The bewildering particulars of the various procedures are of interest more to the specialist. To a general audience, however, it must be of importance to realize that these newer operations offer advantages far in advance of the more generally known methods of cesarean section. This, I trust, will become apparent from a description of the three cases of extraperitoneal cesarean section which I have had occasion to perform in the last eight months.

CASE REPORTS

Case 1.—Mrs. J. L., 35 years old, had her first confinement three years ago. After a long labor a dead child was extracted with forceps. A year later she had a miscarriage.

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* Read before the St. Louis Medical Society, Oct. 3, 1914.

[1] Ehrenfest, H.: Am. Med., January, 1902.

[2] Nagel, W.: Surg., Gynec. and Obst., 1914, xix, 82.

[3] Kohlmann, W.: New Orleans Med. and Surg. Jour., 1914, lxvi, 655.

[4] Peterson, R.: Am. Jour. Obst., 1914, lxix, 582.

[5] Küttner, O. J.: abstr. Zentralbl. f. Gynäk., 1914, xxxviii, 1197.

[6] Kreiss, P.: Zentralbl. f. Gynäk., 1913, xxxvii, 1805.

[7] Barris: Jour. Obst., Brit. Empire, April 4, 1914.

[8] Brunet: Ztschr. f. Gynäk., 1908, lxiii, 124.

[9] Warren, S. P.: Am. Jour. Obst., 1914, lxix, 432.

[10] Broadhead, G. L.: New York Med. Jour., 1914, xcix, 1192.

[11] Newell, F. S.: New York State Med. Jour., February, 1914.

[12] Nicholson, W. R.: Surg., Gynec. and Obst., 1914, xviii, 244.

[13] Boyd, G. M.: Am. Jour. Obst., 1914, lxx, 439.

[14] Davis, A. B.: Am. Jour. Obst., 1913, lxviii, 1017.

[15] I have reported[15] a case of cesarean section performed elsewhere on a dead child after numerous fruitless attempts with forceps had been made in the house of the patient. This woman recovered from the operation but had a serious dystocia at her next confinement.

[16] Gellhorn, G.: Mo. State Med. Jour., 1910, vi, 632.

Jan. 27, 1914, she again was in labor at full term. She had had moderately severe contractions for about forty-eight hours and very strong and frequent pains for about eight hours. At midnight I was called by the two physicians in attendance to perform cesarean section. The membranes had ruptured a considerable time previously, and repeated vaginal examinations had been made *without rubber gloves*.

I found the patient of medium height, with a moderate kyphoscoliosis and a generally contracted pelvis of mild degree (Sp. 22½ cm.; Cr. 26½ cm.; Conj. ext. 19 cm.). The fetal heart-beats were on the left side near the flank. In the upper part of the vagina there was an annular constriction due to scar tissue, the result of her first delivery. The fetal head could hardly be reached from below, nor could it be impressed into the pelvis. The child was obviously very large, to judge from the size of the abdomen. The uterine contractions were becoming weaker but were still frequent.

The indications for a cesarean section were, then, clearly given: a contracted pelvis, a large head in occipitoposterior position, freely movable above the pelvis in spite of fifty-four hours of incessant contractions; secondary inertia; and the history of former dystocia.

It was equally clear, however, that any intraperitoneal cesarean section was contraindicated, for not only had the membranes been ruptured for a considerable space of time, but repeated examinations had been made with ungloved hands, and, perhaps, without the most strict observance of antiseptic precautions. There was, as yet, no fever, but the possibility of an infection, however mild, pointed to the necessity of choosing the extraperitoneal route for the cesarean section.

The steps of the operation were as follows: The patient was catheterized and narcotized with ether. One cubic centimeter of pituitary extract was injected intramuscularly. In extreme Trendelenburg position a midline incision was made from the symphysis to within 1½ inches of the umbilicus. The lower uterine segment distended by the child's head, presented. The peritoneum, which, in pregnancy, is only loosely attached to the lower uterine segment, was lifted with a tissue forceps at its highest point which corresponded to the upper end of the abdominal incision, and transversely incised a distance of about 2 inches. The peritoneum, and with it the bladder, was then gently pushed toward the symphysis with the finger or a sponge in the fashion of a hysterectomy until the firmer connection between bladder and cervix called a halt. The engorged veins at the base of the bladder now became visible and were protected from injury by a large retractor which at the same time held the bladder against the symphysis. A denuded oval with a diameter of about 5 inches thus resulted on the anterior surface of the lower uterine segment. The parietal peritoneum was now stitched to the edges of this denuded oval by means of a continuous catgut (or linen) suture and thereby a complete closure of the abdominal cavity was produced which rendered the rest of the operation absolutely extraperitoneal. Then followed the incision through the lower uterine segment within the entire extent of the denudation and the opening of the amniotic cavity. The child's face was rotated into the uterine incision by placing a finger into the child's mouth. While an assistant held the face in this position, a forceps was applied with the concavity of the blades toward the symphysis and the head gently extracted. The body followed immediately. The child, a female, weighing 10¼ pounds, cried at once. Placenta and membranes were removed instantly and a hypodermic injection of ergot was given. The uterine incision was closed by through and through interrupted sutures of chromic (or tanned) catgut No. 2 and a superficial running suture of finer catgut. The denuded area was cleansed with hot saline solution and dried with sponges. The uterus contracted promptly and there was practically no bleeding throughout the operation. The continuous stitch between parietal and visceral peritoneum around the denuded area was now removed, the bladder peritoneum pulled over the entire wound and sewed on the anterior surface of the uterus a trifle above its original insertion by means of three or four interrupted (or continuous) sutures. The operation was concluded by closing the abdominal incision in the usual way.

The patient went through an undisturbed and afebrile puerperium and left the hospital within two and a half weeks.

Oct. 3, 1914, the patient was in the best of health. There was a strong linear scar. The uterus was of normal size, position and mobility. The child was thriving.

CASE 2.—Mrs. P. H., 25 years old, colored, a dwarf with coxa vara and a deformed knee-joint. Pelvic measurements were as follows: Sp. 24½; Cr. 25; Tr. 33½; Conj. ext. 21½. The pelvis was of the Naegele type of oblique contraction: the anteroposterior diameter lengthened, the transverse diameter asymmetrically shortened due to the fact that the entire left pelvic wall was pushed inward. The child was in L. O. A. position. Although natural delivery seemed quite improbable, it was decided to give the patient the test of labor. Consequently, when labor commenced on June 6, 1914, 6 drops of pituitary extract were injected in order to intensify the contractions. Vaginal examinations had carefully been avoided for several weeks. After twelve hours the head was still freely movable above the pelvis and cesarean section clearly indicated.

The technic of the operation was identical with that employed in the first case, except that it was performed in spinal anesthesia. A male child, weighing 5 pounds 1 ounce and crying at once, was delivered. There was no bleeding during the operation. Convalescence was rapid and undisturbed. Three months later the patient was demonstrated before a number of physicians. The abdominal scar was firm, the uterus small, in normal position. Child well.

CASE 3.—Mrs. A. J., 22 years old, primipara, has always been delicate and poorly nourished. Systolic blood-pressure ranged between 88 and 102 throughout pregnancy. Pelvic measurements: Sp. 20 ½; Cr. 24½; Tr. 28½; Conj. ext. 18½. Aug. 27, 1914, she had been in labor at full term for the past thirty-eight hours. Contractions were regular but only moderately strong in spite of repeated injections of small doses of pituitary extract. The fetal head remained movable above the pelvis. The cervix was ½ inch in length and open for two fingers. The patient showed signs of exhaustion.

The indications for surgical delivery in this case were as follows: Generally contracted pelvis of moderate degree; a large child; primary inertia; delicate and exhausted mother. The technic of the operation coincided in all details with that of Case 1. A female child of 7 pounds 6 ounces, crying at once, was delivered. Recovery was rapid.

Oct. 23, 1914, the patient was perfectly well. Strong linear scar. Uterus of normal size, position and mobility. Child well.

The technic employed in the three foregoing cases has been slightly modified from the one depicted by Kroenig[17] and originated by Veit and Fromme. As appears from the description, it is strictly speaking a transperitoneal method. The parietal peritoneum is first incised, then the visceral peritoneum is pushed off the lower uterine segment and, finally, by stitching the parietal peritoneum to the uterus, the free abdominal cavity is excluded and the operation rendered extraperitoneal. Of the twenty different methods of extraperitoneal cesarean section enumerated by Nicholson, this one appeals to me most strongly because of its simplicity, safety and elegance of procedure. Its superiority over the classical cesarean section, with or without lifting the uterus from the abdominal cavity, is at once apparent.

In the classical cesarean section we have, as pointed out above, an enormous scar with a proportionately increased possibility of hernia; an almost positive certainty of adhesions between uterus and abdominal wall, which carries with it more or less annoying late symptoms and may be a source of danger in future pregnancies; copious bleeding during the operation; escape of amniotic fluid and meconium into the peritoneal cavity during the section and possibly leakage of wound fluid later on due to the contractions of the uterus.

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[17] Kroenig, B.: Doederlein und Kroenig, Operative Gynäkologie, 1912, Ed. 2.

Some of these obvious drawbacks also accompany the "high" cesarean section of Davis, for the profuse bleeding and the escape of amniotic fluid is common to both types.

The chief claim of the high incision is the prevention of adhesions and while such prevention seems plausible enough from a theoretical point of view, actual experience points the other way. Only recently Studdiford[18] demonstrated a uterus with extensive adhesions due to a high cesarean section, and a number of similar observations were recorded by speakers in the discussion following. It is this occurrence of adhesions which makes or mars the result of any abdominal operation. Only he who has had such adhesions himself or has tried in vain to cure them in others will fully appreciate the importance of prophylaxis. Indeed, it seems to me that at present the prevention of adhesions is at once the most important and difficult problem that confronts the abdominal surgeon.

For this reason alone, if for no other, the extraperitoneal cesarean section, and particularly the special technic employed and described in my three cases, recommends itself in preference to either the classical or the high cesarean section. Postoperative adhesions are inconceivable after the extraperitoneal method. The temporary protection of the abdominal cavity by whipping the parietal peritoneum onto the uterus prevents the escape of even the smallest amount of amniotic fluid which eventually might irritate the serous surfaces and give rise to adhesions.

After the operation the bladder peritoneum completely covers the field of operation, and even the three or four sutures which fasten the vesical to the uterine peritoneum disappear altogether from view owing to the continued contractions of the uterus. Thus an unbroken peritoneal surface is left behind, which can neither adhere to the parietal peritoneum (provided the latter has also been closed with proper precautions), nor can it lead to intestinal adhesions.

The afebrile course of the recovery and the perfect well-being of my patients at present still further corroborate this statement.

Other advantages of the extraperitoneal cesarean section are equally obvious. The description of the *modus operandi* may perhaps sound complicated; the actual operation is the reverse. There is a simplicity about it which must needs appeal to the surgical mind. Accustomed as we are to the abundant bleeding during the classical or high cesarean section, the almost total absence of bleeding from the incision in the lower uterine segment is striking. Nor is there any bleeding from the stitch holes around the denuded area.

We know, as a general principle, that any wound in order to unite firmly must be put at rest, but this desideratum is not feasible in the classical or high cesarean section, because the incision has been made through the contractile part of the uterine muscle, which continues contracting for days; whereas in the lower uterine segment such periodical disturbance of firm union does not obtain. These physiologic conditions not only render an exact adaptation of the cut edges in extraperitoneal cesarean section easier than in either of the other two methods, but they also safeguard against the possibility that wound secretions may be squeezed out into the peritoneal cavity.

On the other hand, does not this very thinness of the wall and comparative lack of contractile muscle fibers favor rupture of the scar during a future pregnancy or delivery? This objection which, theoretically, seems well founded, has deterred me for years from adopting the extraperitoneal cesarean section. Practical experience, however, has not supported such anticipation. Nicholson, in his thorough study of the literature, concludes that, "in so far as we may judge by the statistics at present available, there is at least no marked tendency to rupture of the old scar or other difficulties in future pregnancies."

The scar after extraperitoneal cesarean section is practically identical with that of a vaginal cesarean section and we know that the latter does not predispose to rupture. Within the last year I had occasion to deliver two women on whom I had performed vaginal cesarean section some years previously. Both deliveries were normal, exceptionally rapid, and without any cervical lacerations. Similar observations have been made by others.

That injuries of the bladder or traumatism to the vesical plexuses can be easily enough avoided, appears from the description. As a matter of fact, I am not aware that any such complications have been recorded.

There is no need to fear that the pelvic connective tissue will become infected if only the operation itself has been strictly aseptic. Neither need we feel concerned lest the available space prove too small for our manipulations and the incision tear further during the extraction of the child. Such an objection is largely theoretical if we remember that the incision through the lower uterine segment measures about 5 inches.

There is only one condition in which the extraperitoneal does not offer advantages over the intraperitoneal method, and that is in the placenta praevia. Here an incision through the lower uterine segment would open the enormously dilated blood sinuses, the inundation with blood would render orientation difficult, the lack of contractile fibers militate against prompt checking of hemorrhage, and the friability of the tissues favor tearing and prevent accurate adaptation.

With this single exception, the extraperitoneal method not only possesses all the advantages of the ordinary cesarean section and its modifications, but so far as our present experience goes, surpasses it in safety and freedom from postoperative complications.

It seems strange, therefore, that the newer method has found but scant recognition in this country. For aside from my three cases, there has been reported in all but eighteen others—one operated on by Kelly,[12] another by Druskin[19] and sixteen by Hirst.[20] This last author, who employs a method similar to that used in my cases, expresses himself enthusiastically and gives the extraperitoneal method preference in the majority of instances.

A few more cases were put on record in the discussion on Hirst's paper just referred to. Growing familiarity with the technic will no doubt remove quickly the bars which in the past have prevented the general adoption of extraperitoneal cesarean section.

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[18] Studdiford, W. E.: Am. Jour. Obst., 1914, lxix, 480.

[19] Druskin: The Journal A. M. A., May 2, 1914, p. 1383; Med. Rec., New York, 1914, lxxxv, 978.

[20] Hirst, B. C.: Bull. Lying-In Hosp., New York, June, 1914.

VARIOUS TYPES OF LUES

A CLINICAL AND LABORATORY STUDY. THE ABELIN REACTION. DIRECT SUBDURAL INJECTIONS*

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The clinical history of syphilis, admittedly one of the most protean of all diseases, is in the process of being rewritten, and when the chapters are relatively complete it will be found that we are indebted rather to the laboratory worker than either the internist or neurologist for our more complete knowledge. It was at one time supposed that syphilis of the nervous system was a late manifestation of the disease, and this statement is generally true from the clinical point of view. Precocious syphilis was the term employed by Gowers for those cases in which patients manifest organic nervous phenomena within a year from the appearance of the primary lesion. For many years it has been recognized as a possibility, and cases have been reported by Gowers, Fournier, Oppenheim, Nonne and others, including an instance furnished by Gregory and Karpas of a case of cerebral syphilis occurring six months after the development of the primary lesion.

In going over some of the patients and records in the hospital at the naval home in Philadelphia, with Dr. Stokes, formerly surgeon-general of the U. S. Navy, I was struck with the greater virulence of the disease in general and the serious and occasionally early involvement of the nervous system occurring in sailors who had contracted the disease in the Orient. It is solely from the clinical point of view, however, that we of to-day are justified in regarding syphilis of the nervous system as among the later phases of the activity of the treponema. Soon after the use of salvarsan became general, considerable discussion arose as to the part it apparently played in causing involvement of various cranial nerves and other more or less pronounced nervous symptoms. Previously free, involvement became manifest within a few hours or days following an injection of the drug. Routine study of the cerebrospinal fluid from luetic patients revealed to Dreyfus that about 80 per cent. of late primary and early secondary cases show distinctive pathologic changes in the spinal fluid (cytologic increase or increase in protein content and more rarely a positive Wassermann). Thus, the explanation of the preceding, essentially a Herxheimer reaction, local or diffuse, depends on distribution of the treponemas, and is due to liberation of toxins resulting from the lytic action of salvarsan on the parasite.

This carries with it the thought, first, that all initial doses should be small, and secondly, if symptoms of involvement of the nervous system occur, it is not necessarily a contra-indication to the further use of the remedy, but rather the reverse, though in small doses. Even the few early cases which we have felt justified in submitting as illustrative, show well the pathologic changes in the spinal fluid and there is absolutely no doubt from the point of view of the serologist, that the vast majority of luetics, from the date of the primary infection, are essentially candidates for syphilis of the nervous system. Though they may not present a single symptom, the treponemas invade all parts of the body within a day or two at most from the time of infection. Neisser succeeded in inoculating animals with blood taken from monkeys five days after the original infection and with splenic pulp taken on the twelfth day. Hoffmann has shown that monkeys may be infected by using the blood from a human in the secondary stage, and that under such circumstances the incubation stage in the monkey is shortened. Infection successively passaged through a series of animals increases the virulence of the infection and shortens the incubation period. Flügel recovered the treponema from the blood of a woman with a secondary, maculopapular eruption. Indeed, it is probable that the eruption is in the nature of a parasitic embolism similar to the rose spots of typhoid fever, which are mycotic, congested, capillary loops. Veillon and Girard selected a typical maculopapule and excised it on the third day after it appeared. The capillaries were dilated and congested with an early, perivascular, lymphocytic infiltration, and treponemas were found, by the silver method, in and about the capillaries. Neisser, Buschke, Levaditi, Tomasczewski, Noguchi and others have found the parasite in tertiary lesions of the skin and various organs including the nervous tissue, either by direct staining methods or by inoculation into animals. Von Zeissl found records of more than 150 cases of facial paralysis, deafness or retinitis occurring within one year of the period of original infection. Thus it is evident that every stage of the disease is potentially infective; the possibility of transmission, however, becoming less in direct proportion to the elapsed time since the original infection.

Two points in connection with the primary infec-lesion, the knowledge that syphilis may be contracted without the development of a chancre, and the well-known evanescence of secondaries in some cases, should render us tolerant in our judgment of those from whom no history is obtainable. Jonathan Hutchinson has reported several cases, one in a nurse and several in physicians, in whom the disease followed a punctured wound, the first evidences of actual infection being adenopathy and eruption. This possibility has since been confirmed experimentally. A chancre is only possible when cutaneous or mucous membrane infection occurs. Again, we sometimes see a patient in whom a chancre has developed, often atypical, to be sure, who admits exposure months or even a longer period in the past, but who denies recent infection. Keogh, in 1911, called attention to the fact that, in relapses occurring even at long periods after salvarsan has been given, whether the Wassermann be positive or negative at the time of the relapse, the clinical picture is more or less a replica of the condition presented at the time the patient first sought treatment. Thus, if treatment is given in the primary stage, a relapse is often manifested as a chancre, secondary stage—secondaries. Keogh regards this as a true latency, unlike the apparent latency of cases treated with mercury, which, as a rule, assume a far more advanced type in the relapse.

Briefly, then, the present concept of syphilis is that, in its earlier stages, it is a septicemia with more or less involvement of the nervous structures and coverings from the beginning. In the course of time, for some unknown reason, special predilection is manifested for some particular organ or tissue, *after a period of* apparent latency which only serologic study will reveal. In some instances, indeed, the latency is so well concealed that only a provocative Wassermann, as first suggested by Gennerich and almost simultaneously by Milian, will reveal it. This test is practically a Herxheimer reaction and proves the presence of treponemas somewhere in the body, hence their lysis and the subsequent successful application of serologic diagnosis. Recognizing the comparative frequency of early involvement of the central nervous system, as shown by the serologist, *it would seem advisable to* make studies not alone of the serum, but also, in every case of lues or suspected lues, to make routine examination of the spinal fluid, and to control treatment by subsequent studies, and, finally, to determine a cure by *provocative injections governed by complete laboratory* observations. It is not too much to claim that such a plan would in all probability prevent the development of the more destructive forms at present so common among us.

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* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the section and in the authors' reprints. A copy of the latter will be sent by the authors on receipt of a stamped addresed envelope.

As to types of lues, it is only possible to speak in very general terms. Except for the rare cases in which a chancre fails to develop and those in which secondaries are fleeting or suppressed, the most constant and fairly uniform stage is the septicemic or secondary period. Beyond this we may speak of pernicious anemic or other blood dyscrasias, of cardiovascular, visceral, osseous, ulcerative cutaneous, central nervous (including special sense-organs) and congenital types, but each of these groups presents many varieties. Serologically, we are also unable to speak of definite types. We believe, however, *that when a* standard technic is developed, especially with reference to the Wassermann reaction, and particularly when we reach a conclusion as to the proper antigen to use, less criticism will be leveled against its diagnostic value than is unfortunately the case at present. Even under existing conditions, the chief critics are those who possess no laboratory experience. Until such time it might be of value, in reporting laboratory results, to mention the antigen employed and the particular form of complement-deviation test used in the work, and especially the former. Using an alcoholic antigen prepared from fetal syphilitic liver, a sheep hemolytic system and the method as given by Citron, only varying the complementary strength to obtain relative quantitative results instead of using the continental method of a definite 0.1 c.c. of guinea-pig's serum, it will be found that the large majority of late primary cases, and all untreated secondary cases will give a positive serum, and very rarely a secondary will give a positive Wassermann in the spinal fluid. The majority of secondary cases will also show some other spinal fluid change, as increase in protein content or an increase in cell-count, with prompt reduction of Fehling's solution. Latent cases occasionally give negative Wassermann in serum and fluid, with a positive Wassermann in the serum as the rule, though they may give changes in the protein content of the fluid; but in these cases a reaction may be invariably provoked. The majority of non-latent tertiary cases give positive serums and more marked pleocytosis or protein increase and occasionally a positive spinal fluid Wassermann. Of the nervous forms, tabes is the most frequent. A very small number is serologically negative, but these are rare. The majority have a positive serum, a positive Wassermann in spinal fluid, a moderate pleocytosis and a more or less marked Nonne and less often a positive Noguchi. Since we have used spinal fluid in amounts of 0.5, 1.0 and 1.5 c.c., we have rarely had negative Wassermanns. In the cases clinically marked by severe pain, the cell-count is usually higher, and other evidence of inflammation of the root-zones and meninges is shown by marked Nonne or Ross-Jones and Noguchi reactions. A large proportion of this type also gives a positive Wassermann in the spinal fluid. When strong positive Wassermann is obtained in both serum and spinal fluid, in most instances there is a more or less pronounced pleocytosis up to 50 or 60 possibly per cubic millimeter, with protein increase and often a positive Lange (gold solution). These are the least amenable to treatment and are spoken of as Wassermann-fast types, though not by any means invariably so.

The unilateral type of tabes and those cases presenting but one or two symptoms, as pupillary rigidity and Westphal's symptom, present no special serologic type differing from any of the above. There is one clinical phenomenon of great value diagnostically, which occurs in the vast majority of tabetics and one which is *not sought for routinely*, but which furnishes strong collateral proof of the existence of tabes often at a time when very few criteria are manifest. We refer to that which Collier Martin has termed the tabetic sphincter. Digital examination of the rectum reveals *external sphincter paresis. Firm* lateral pressure is painless and results in more or less relaxation of the anus, permitting a good view of the lower part of the rectum. This relaxation may not be overcome for a period from a few seconds to some minutes.

The greater the degree of meningeal involvement the higher the cell-count and the greater the protein content. Hence, in cerebrospinal syphilis, the high count is found except in the purely endarteritic forms. In some of the cerebrospinal cases the serologic picture *closely simulates that of paresis, except that it is far* more amenable to treatment than is paresis. Hence a serologic diagnosis is of value not alone in a diagnostic sense, but also from the prognostic standpoint.

In general paresis *the rule is to find a strongly positive Wassermann in both serum and spinal fluid*, a moderate pleocytosis and a marked protein reaction. Until very late in the course of the disease, the serum is always positive, but in a small proportion of cases the spinal fluid Wassermann may be negative throughout. Paresis frequently falls under the Wassermann-fast group, and in most instances the Lange, gold solution, runs a parallel course with the Wassermann of the spinal fluid. These laboratory results and our *failure to make satisfactory serologic or clinical* impress on the types of lues involving the nervous system, when combined therapy by mouth and intravenously was employed, led us to take up subdural work. We had made attempts to recover phenolsulphonephthalein, methylene blue and formaldehyd from the spinal fluid but without success, after previous administration subcutaneously in the first, by mouth and subcutaneously in the second, and by mouth (hexamethylenamin) in the third instance, and we had never observed an icteric spinal fluid in any case of jaundice. We were, therefore, ready to accept the view that the best if not the only way to reach the nervous tissue is by direct methods. We found, too, that when we used a direct subdural injection of neosalvarsan without a previous intravenous injection, we were able to recover arsenic in the urine in a few hours, showing that absorption had certainly taken place. Tilney, before the New York Neurological Association, reported some experimental evidence along these lines. He used trypan-blue, a vital stain, injecting 0.1 per cent. into cats and allowing them to live for twenty-four hours. At the expiration of that time, when a subdural injection had been given, the dura mater was intensely stained, the brain stained diffusely. The viscera were not stained. Microscopically he found the trabeculae of the pia extending into the brain and cord were stained, also the walls of the blood-vessels. The ganglion-cells and nerve-fibers were not stained. It seemed, therefore, that the dye found its way into the nervous tissue along the trabeculae and by the blood-vessels. Intra-arterial injection caused skin and visceral staining but none in the brain or cord or the meninges. Intravenous injection resulted in staining of the dura, pia and pituitary, though less than by intraspinal injections. Frozen sections showed the cord unstained. Subcutaneous injection resulted similarly to the arterial, the nervous tissues were unstained, but the viscera were stained.

Sicard employed ink by the lumbar subdural route in animals. In from two to four hours he found particles in the cerebellar region and still later in the region of the peduncles and within the ventricles. In from twelve to fourteen hours he found them also in the cortex of the cerebrum. He observed also that substances in solution in the cerebral fluid were removed by osmosis while particulate substances were removed by leukocytic phagocytosis. In spinal anesthesia it is well known that, if the dose be large and the specific gravity of the injected fluid be low, within a brief period, often a matter of a few minutes, both respiratory disturbance and vomiting will occur. We know also that the subdural fluid and that of the ventricles communicate normally through the foramen of Magendie at the apex of the fourth ventricle and through the foramina of Luschka at the outer margins of this same ventricle. Both on anatomic grounds, therefore, and on the basis of experimental evidence we are justified in our belief that better results must ensue in early cases of syphilis of the nervous system if subdural treatment is resorted to; and as many of the cases also have more or less cutaneous, visceral or osseous lues, the combined intravenous and subdural routes seem to be indicated in those whose infection during the earlier period has not been studied and treated in sufficient detail to prevent the more serious manifestations from arising.

To arrive at the approximate dosage of neosalvarsan given subdurally when 12 c.c. of a 40 per cent. solution are employed after an intravenous injection of 0.9 gm., we took the figures of Bischoff, who found the total volume of blood in the bodies of two executed criminals to be 7.1 per cent. and 7.7 per cent. respectively. Thus, to a patient weighing 150 pounds, each cubic centimeter of serum would contain about 0.00017 mg., and 12 c.c. about 0.002 mg. We then employed the Abelin reaction to determine the presence of arsenic in serum and urine. Using dilutions of known strength we obtained the following figures:

1:100	Beautiful red contact ring
1:10000	Reddish ring
1:20000	Brownish ring
1:30000	Brownish ring
1:40000	Brownish ring
1:50000	Very faint brownish ring
1:60000	Negative

We were unable to obtain a reaction in the serum of blood removed in ninety minutes, in any patient treated intravenously, and we have found a negative in one case and weakly positive in another at the end of sixty minutes. In the urine we were unable to recover it after ten hours. After intramuscular injections we did not examine the serum, but in the urine we obtained the reaction in thirty-one and forty-eight hours respectively. Abelin found practically the same results, though in two patients of his series treated intravenously, he obtained the reaction in the urine in seventeen and twenty-two hours. We found the reaction positive in the serum in from ten to fifteen minutes after the intravenous injection was given. The early disappearance of the Abelin reaction led us to take the blood in from thirty to forty-five minutes after the intravenous injection was completed. We have treated nine cases in all, two by the Swift and Ellis alone, two by the direct method alone, and five by combined Swift and Ellis and direct methods. Despite the experience of Wechselmann and Marinesco and more recently the experimental evidence of Swift and Ellis, we determined to try the effect of direct injections without previous intravenous. The maximum dose employed was 0.02 gm. of neosalvarsan, and the minimum 0.006 mg.

In all dosage we found the direct method too irritating. After a total of 11 direct injections, we found that the three paretics suffered the least, two of them having to be catheterized, one during the first twenty-four hours, one only at the end of the third day, and the paretic who had received 0.02 c. gm. and 0.01 c. gm. at different times, had no symptoms at all. Of the cases of taboparesis and tabes, all the direct injections were followed by severe pain, causing retention necessitating the use of the catheter for as much as two weeks and obstinate constipation. The direct injections were given in salt solution to one patient only, while in the others we employed the patients' inactivated serum in salt solution, a 40 per cent. dilution. It is well known that irritative phenomena occur after the Swift and Ellis method, so that if, as Ravaut claims, hypertonic salt solution robs the direct injection of the irritating effects of neosalvarsan, it might be well to use hypertonic salt solution as a basis for the dilution in the method of Swift and Ellis. One very advanced case of taboparesis, No. 28 of our series, was treated by the method of Swift and Ellis and by the direct method at various times. The patient finally died. Grossly, a little congestion of the meninges was found at necropsy, but sections studied by W. G. Spiller failed to show definite evidence of irritation. One case of paresis treated by both the direct and indirect methods, No. 34, shows marked improvement after failure to make any impress by seven intravenous injections given at weekly intervals and a number of injections of sodium cacodylate in 15 grain doses. The other two paretics are *in statu quo*. Two of the tabetics have shown marked improvement clinically, Nos. 26 and 27. They have received but two Swift and Ellis injections each. On the other hand, we have had two cases of tabes not included in our series, one with absent knee-jerks and lightning pains, the other with pupillary rigidity, absent knee-jerks, vomiting without pain, paresthesia and tabetic sphincter, both of whom recovered under intravenous treatment and mercury and iodids by mouth. The former, less marked, made an absolute recovery clinically and serologically, the latter has become subjectively symptom-free, knee-jerks now being present by reinforcement, vomiting, paresthesia and lightning pains totally relieved, the pupillary rigidity uninfluenced, serum now negative, but spinal fluid has not as yet been examined. These cases prove our previous statement that if recognized early, and this includes careful clinical and serologic study, tabes may prove amenable to intravenous injections together with mercury and iodids by mouth. In later cases, the value of the Swift and Ellis and direct methods are still *sub judice.*

ABSTRACT OF DISCUSSION

Dr. Edward L. Tuohy, Duluth, Minn.: Did Dr. Robertson find, in his experience, any marked evidences of difference in the various forms of this disease? It is said that in the Orient syphilis is more severe than in civilized countries. It is also said that it is more prone to attack the central nervous system. There happens to be a tremendous amount of discussion regarding the many heart-lesions that occur in lues and I would ask why this is. In tuberculosis we realize that when once an individual is tuberculous he is always tuberculous. It is shown that tuberculosis originates, as a rule, in childhood and such an individual will remain tuberculous thirty or forty years after inoculation. The same thing applies to lues; when once inoculated the individual remains syphilitic throughout his life. Regardless of all treatment the spirochete remains in the tissues until the end of the man's life. In the course of time, for some unknown cause, special predilection is manifested for some particular organ or tissue, after a period of apparent latency. In some instances this latency is so well concealed that only a Wassermann test will reveal it. The spirochetes lodge here and there in the body and the central nervous system is frequently involved. Often the "hit and miss" treatment may do good, but, on the other hand, may do harm by upsetting the immunizing processes that the body has developed.

Dr. B. F. Diseroad, Philadelphia: Will Dr. Robertson explain the following condition and state if in his experience he has made the same observation? We find a number of individuals with syphilis of long standing who give a history of chancre twenty or twenty-five years previously. This is followed by a long period of latency with the individual apparently enjoying good health, when suddenly manifestations of the disease crop out, either as tubercle syphilids, gumma of the internal organs and superficial structures, or of the central nervous system. Why then do these tertiary lesions following this latency occur singly in one of these various locations? All of these patients not treated for syphilis developed symptoms indicating lesions in cord or central nervous system. Some years ago I treated an elderly person who gave a history of recent trauma, but no history of any initial lesion. In the limb injured a gumma developed, but a clinical diagnosis was not made until symptoms of a lesion of the central nervous system cropped out, which was proved by a 4-plus Wassermann. Salvarsan caused an arrest of symptoms and the gumma promptly disappeared.

Dr. A. J. Caffrey, Milwaukee, Wis.: I think Dr. Robertson is wise in bringing out the point concerning the elimination of the primary chancre in syphilis. I know of a surgeon in Milwaukee who punctured his index finger while circumcising a primary chancre. No chancre appeared as a result but the secondary symptoms of syphilis appeared after a few weeks. He went on to an advanced paresis from which he died. Evidently this was a case in which the man became infected at the time of the circumcision without the appearance of a chancre. Dr. Lorenz of the state insane asylum at Madison, Wis., reported some success in the treatment of these cases, at a meeting of the Wisconsin State Medical Society. He gave neosalvarsan in minute doses—not by the Swift and Ellis method but by direct intradural injections.

Dr. J. V. Klauder, Philadelphia: In a study of the cerebrospinal fluid from syphilitic patients, in a series of cases greater in number than those given by Dr. Robertson, the following results were obtained. Our list of cases does not include any of primary syphilis. In 70 per cent. of patients with secondary syphilis, we obtained some evidence of an abnormality of the cerebrospinal fluid. Ravaut gives 67 per cent.; Dreyfus 80 per cent. In our series of tabetic cases we obtained a positive Wassermann in the serum in 62 per cent. of the cases. Swift and Ellis and Hauftmann both report 66 per cent. The Wassermann in the spinal fluid in the same series was positive in 82 per cent. of our cases, and Swift and Ellis report 87 per cent. The spinal fluid in all of our tabetic cases showed some evidence of an abnormality, except one, a clear-cut case, in which the spinal fluid was normal. In the same series, about one-half either denied infection or had mild secondaries. Attention has already been called to this, especially by Mott. Many of the tabetics gave a history of what was no doubt mixed infection; I believe this occurrence of mixed infection is more common than is usually accepted. The published reports of the intraspinal treatment of tabes and paresis are somewhat contradictory. The literature on this subject is rather confusing. Many do not countenance subdural injections of any character in the treatment of lues. In the Swift and Ellis treatment the dose of salvarsan or neosalvarsan contained in the serum is indefinite and variable. In the direct intraspinal treatment Ravaut advocates the injection of a rather large amount of salvarsan in a hypertonic salt solution, as much as 12 mg. Marked symptoms of irritation following this plan of treatment have been reported. We have injected 20 mg. of neosalvarsan intraspinally, which was followed by marked symptoms of irritation, in some cases. We do not believe that the efficiency of the treatment depends on the large dose injected. Ogilvie advocates the direct intraspinal injection of neosalvarsan in small amounts not exceeding 1 mg. No definite plan of direct intraspinal treatment has yet been formulated. The Swift and Ellis technic is a matter still *sub judice.* We believe that the most accurate plan so far as dosage is concerned, is first, to remove some of the patient's serum, following this by an intravenous injection of the dosage decided on, and, finally, to introduce into the inactivated serum a definite amount of neosalvarsan not exceeding 5 mg., which should be given subdurally. This method also possesses the advantage of saving considerable time, and permits the treatment of several cases in the time usually allotted for one Swift and Ellis treatment.

Dr. W. W. Tompkins, Charleston, W. Va.: What observations have been made in treating cases of syphilis of benign character as found in the negro? Of the negroes in my community many are intemperate, ignorant, suspicious, and will not carry out any directions given them in the way of treatment. If they come with a chancre one can do practically nothing after making the diagnosis. When the secondaries appear it is difficult to make them out because of the color. There is one point of interest, however, with regard to the occurrence of syphilis in the negro. I have observed that certain glands become enlarged, but the patients go on from year to year and do not suffer from the disease. So far as the late symptoms of the disease are concerned, such as locomotor ataxia and paresis, they are the rarest things in the world among the negroes. The glands that become infected are the cervical; they enlarge and after awhile they suppurate, then heal, leaving scar-tissue with more or less deformity. The surprising thing about these cases is that, with little or no treatment and in a class of patients that are often underfed and overstimulated, the symptoms should be so mild and free from serious complications or sequelae.

Dr. W. E. Robertson, Philadelphia: I have had little experience with lues in the colored race, so that I am unable to state whether or not grave lesions are common among negroes. In a few instances I have seen optic atrophy, tabes and other evidence of profound involvement of the nervous system in the negro, and such cases I believe are fairly frequent in the wards of the Philadelphia General Hospital. Concerning the modern treatment of luetic infections, we feel forced to utter a note of warning. The rapidity with which primary and secondary lesions disappear after an initial intravenous injection gives a false sense of security to the patient and increases the moral obligation of the physician. Unless he makes clear the necessity for careful laboratory studies, both for diagnostic purposes and as a guide to treatment, there will probably be many more tertiary and paraluetic (so-called) wrecks than confront him now, as a result of the mercury and iodid plan of treatment. Consistently treated, both intravenously and with mercury in some form, it is probable that every patient would make a complete recovery; neglected it is still problematic how large a proportion can be saved by subdural therapy. We feel certain that no one in whom sequential exudation and inflammation has occurred can hope for much from any form of treatment. We also believe that when subdural treatment is practiced the dose injected should not exceed 5 mg. and as the dosage under the Swift and Ellis plan must be speculative, it would seem better first to remove the patient's serum, separate and inactivate it, then prepare the intravenous injection, removing an amount not exceeding 5 mg., which should then be injected in the subdural space after diluting it in the previously inactivated serum. The rest of the salvarsan solution should then be given intravenously.

OSTEOPLASTIC SURGERY OF THE FACE*

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ALTERATIONS OF THE FACIAL CONTOUR BY THE IMPLANTATION OF FAT

The modifications that the facial contour undergoes in the adult are dependent chiefly on alterations in the amount of subcutaneous fat. In the operative modification of the facial contour no substance is as well adapted for the purpose as adipose tissue. Bits of free homoplastic fat when properly imbedded subcutaneously find ready attachment, do not provoke serious inflammatory reaction and retain, after vascularization, their storage capacity for hydrocarbons. Transplanted fat may under conditions of increased nutrition undergo a certain amount of hyperplasia, and may waste during starvation. The transplanted fat when vascularized remains fixed in position and, unlike paraffin, when imbedded under the skin shows little change in outline, does not produce hyperemia of the overlying skin or marked fibroconnective tissue formation. In 1907 I[1] reported several operations in which free transplants of fat were used to isolate nerve trunks that had been subjected to operation. Recently Binnie[2] has reviewed the literature and has indicated many operative procedures in which free transplants of fat are of value.

My attention was first directed to the advantage of fat transplantation for the correction of facial deformity by a patient who had suffered extensive necrosis of both cheeks following the injection of paraffin by one of the most widely advertised "beauty doctors." The disfigurement was so great that the patient had been a recluse for six years. After excision of the scar tissue and the formation of cutaneous flaps, the depression remaining on the one side was so noticeable that finally a flap of fat was dissected subcutaneously from over the malar bone and turned down and imbedded, giving a satisfactory cosmetic effect. Later a patient presented himself with a marked facial asymmetry from lack of development of the lower jaw, particularly on the left side, following an ankylosis of twenty-four years' duration. After a bilateral arthroplasty a segment of one of his costal cartilages was implanted in the chin, and finally through an incision placed underneath the edge of the mandible, a subcutaneous pocket was formed and the sunken left side of the face contoured with bits of fat taken from the subcutaneous tissue of the patient's abdominal wall.

The implantation of the fat is useful after the removal of tumors or the liberation or resection of scars which leave secondary unsightly depressions. Fat may be also implanted for bony disfigurements, as after impacted fractures of the malar or frontal bones. After disfiguring operations, as on the frontal sinuses, and for certain congenital or acquired deformities such as receding chin, asymmetry of the maxillary bones and the like, the implantation of fat is useful. For the subcutaneous imbedding of fat the cutaneous incision need not be large, and should, if possible, be placed at some inconspicuous point as along a normal wrinkle line or beneath the jaw. The subcutaneous tissues are separated by a knife or by tunneling with blunt-pointed scissors. After arresting hemorrhage, bits of fat of sufficient size to correct the deformity are introduced and held in the pocket, which obviously must be of proper size and situation, by subcutaneous sutures of fine catgut. We have usually found it undesirable to suture the fat in position, as this prevents the adjustment of the imbedded fat to the containing cavity. The fat may be introduced in the form of small portions or strips and the subcutaneous closure should be sufficiently tight to prevent any extrusion of the fat from the limiting pocket. The skin is finally approximated by an intracuticular or very fine epidermic suture. Fat may be obtained from the adjacent subcutaneous tissue or from the abdominal wall. We have, thus far, not employed fat from another person. Although we have used larger quantities of fat in the restoration of the contour of the breast after the removal of benign tumors than are usually required in facial surgery, we have had no suppuration or evidence of absorption of the imbedded tissues.

THE CORRECTION OF SADDLE-NOSE

In certain cases in which the bridge of the nose has been lost without destruction of the tip or alae, a satisfactory bridge can be formed of metal, cartilage or bone. We have employed portions of a rib, costal cartilage, and tibia, the last method presenting certain advantages. An incision about 1 inch long is made from the base of the nose upward in one of the wrinkle lines of the forehead and is carried to the bone. With blunt-pointed scissors or a separator carried close to the nasal bones, the soft tissues over the bridge of the nose are thoroughly separated and elevated. A tibial transplant is removed, cut to appropriate shape, and after arrest of oozing is slid into position from the frontal incision, its ends respectively abutting against the frontal bone, and the cartilage just a short distance above the tip of the nose. If necessary two or more short strips of bone may be superimposed. The deep tissues are closed with fine catgut and the skin by a subcuticular or delicate epidermal sutures. The operation has the advantage of simplicity, slight disfigurement, of a location of the incision in an area susceptible to sterilization. Local anesthesia suffices. In one instance, after paraffin had failed to maintain its position, we split the tip of the nose just above the nares and imbedded a section of costal cartilage with excellent immediate effect, but infection and extrusion of the fragment followed.

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* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Babcock, W. Wayne: Nerve Dissociation, Ann. Surg., November, 1907.

[2] Binnie: Surg., Gynec. and Obst., February, 1914.

THE CORRECTION OF SKULL DEFECTS

Silver plates placed under the scalp to cover defects in the skull present a large area of metallic surface that stimulates serous secretion. In a very limited experience we have found it necessary repeatedly to evacuate such secretion until finally infection has occurred and it has been necessary to remove the plate. In two instances we have remedied the defect in the skull by bridging with Lane plates which were so bent as to conform to the contour of the skull and were firmly fastened to the bone by screws. In the first instance the large flap of bone which had been separated fell to the floor during the operation and, of course, was not replaced. The patient was relieved of Jacksonian epilepsy but a large depressed area remained in the parietal region, which, as he bent forward, filled and caused so much vertigo that the man could not work. The disfigurement and symptoms were relieved by the use of the Lane plates, the thickened dura being lifted and fastened to the steel bars by interrupted sutures. In a second patient, a luetic woman, a disfiguring defect in the frontoparietal region was first partially corrected by a silver filigree. The silver filigree caused no irritaiton but was so soft as to become depressed and we later removed it and substituted Lane plates with the satisfactory cosmetic result.

IMPROVISED METHOD OF CORRECTING DEFECTS OF THE MANDIBLE

Modified Lane plates fastened to the bones by screws may be used in an emergency to take the place of absent portions of mandible. In one of our patients a large part of the left side of the face including the ramus and part of the body of the lower jaw was blown away by the charge from a shotgun. After operations to overcome the ankylosis and to restore the lining and covering of the cheeks, one arm of a three-pronged Lane plate was broken off and the plate fastened to the body of the jaw so as to form a new angle and a new ramus. Despite the attenuated and densely cicatricial tissue in which this flap was imbedded, it was worn with great improvement for over six months, being finally removed because the sharp rough angle of the plate penetrated the skin and produced a slight sinus without, however, much irritation.

RHINOPLASTY

In the Italian method of rhinoplasty in its original or one of its modified forms, it is usually desirable to swing a pedunculated supraorbital flap down on the nose leaving a defect in the lower part of the forehead that must close by granulation or skin grafting. We have found it of advantage in such a case, after removing the flap, to make a second incision close to the hair line, and, after mobilizing the tissues of the upper frontal region, push them down and accurately fill in the gap above the eyebrow. In this way little disfigurement remains in the lower part of the forehead and the granulating cicatrix is left close to the hair line where it may be covered by a hat or by a suitable dressing of the hair.

ENLARGEMENT OF THE EXTERNAL NARES

Much attention has been given to obstruction in the upper air-passages, and the influence of such obstruction, whether in the nose or pharynx, on the shape of the mouth and the development of the bones of the lower part of the face, requires no further emphasis. Apparently, however, little attention has been paid to obstruction due to the small size of the external nares. Fortunately, by resection of the skin and thin cartilaginous walls above the nasal openings, small and round nasal openings may be converted into fair-sized keyhole apertures. With a very sharp knife, wedge-shaped incisions are made. Great accuracy in planning the incisions is necessary to produce satisfactory symmetry of the two openings, and if the surgeon has not considerable dexterity it may be better to enlarge each opening by a punch to ensure uniformity.

The wound edges, after the wedge-shaped excision, are accurately united by fine horsehair sutures and permitted to heal without an external dressing under a scab. The stitches should be removed on the second or third day, by which time primary union will usually have occurred. By this method it is possible to increase the nasal aperture a third or more and to give the patient a corresponding relief from his external nasal obstruction.

2033 Walnut Street.

ABSTRACT OF DISCUSSION

Dr. M. I. Schamberg, New York: I am particularly interested in Dr. Babcock's method of transplanting fat from one portion of the body to another, and it sounds like a decided step in advance. The only question raised in my mind was whether or not that fat would in time be resorbed. I would be glad if Dr. Babcock would outline the behavior of this fat and the length of time that it will remain after the operation. I wonder whether he has had such an experience in using steel screws as I have had, in that they become badly rusted owing to the amount of oxygen in the tissues and the amount of moisture we find there. I do not believe much in Lane plates. I have not had recourse to the Lane plates but have had a case in which I was operating for marked prognathism, in which I took out a section of the jaw on both sides and brought the jaw back and held it in place by steel plates, which I removed subsequently. They were badly rusted and I believe were a source of irritation. I imagine the Lane plates retained only for a short time would do no harm. The results in this particular case of marked prognathism, however, have been as ideal as any I have seen. In another case a man who had been operated on in another department of the Post Graduate School of Medicine had lost his entire nose, save a little tip which flapped up and down and in which the opening afforded a full view of the nasal chamber and the accessory sinuses. In this case we are desirous of doing a cosmetic operation. Dr. Mitchell has devised a plan to restore the bridge between the nose and the mouth, and we are going to make a frame-work to be attached to a plate in his mouth and to run up into the nasal chamber. It will be cleansed through the mouth. The top of this appliance will be held in position, and the plastic work done over this frame-work. The skin can be folded over from the forehead, and I think we can give the patient a fairly good contour over the nasal chamber. The cleansing can be done by irrigation through the nostrils, or by the removal of this plate in his mouth, which will be supported by several teeth. We shall endeavor not to have any pressure on the bony structure above so that there will not be any resorption in this region. In another case a good portion of the jaw was removed from immediately above the angle to the bicuspid angle, and the remaining parts were held in place by silver plates riveted directly to the bone. This case resulted beautifully from a mechanical point of view. The patient immediately after the operation was able to open and close the jaw, and to masticate with absolute articulation, but six months later the bone to which the silver plates were anchored necrosed and we had to remove the plates. I am not much in favor of permanent metallic attachments to bone as it interferes with the filling in of the tissue.

Dr. H. S. Dunning, New York: Will Dr. Babcock state how the Lane plates are held in when a greater part of the bone is carried away—whether they are attached to the end of the bone or to the soft tissues?

Dr. Wayne W. Babcock, Philadelphia: Many of these things have been alluded to in a fragmentary way and of course require working out. As to the permanence of the irritation in tissues produced by the Lane plate, I think it is largely a matter of infection. With a clean Lane plate imbedded or fastened to the bone, and without infection, I have seen no marked corrosion. Some of these I have seen in place for a number of years in connection with long bones. In one case the plates remained for three years and caused no irritation. Some of these plates were fastened with silver screws, and some with a steel alloy screw which is supposed to be non-tarnishing, though it does tarnish. I think if we have an opening and access to outside air, trouble usually ensues from this oxidation. That is the particular trouble in operating about the jaw; it is so hard to put these plates in the jaw without some communication from the outside, and that means, usually, that sooner or later the plate has to be removed. In one case we screwed the fixed Lane plate to a portion of the bone proper. It was fastened by two screws in front and fixed firmly and at rest in the tissues. In that case if the plate had been smoother I believe it would have been retained, because when the plate was finally removed there was no marked corrosion. As to the resorption of fat, for about twelve years we have been transplanting skin with the subcutaneous tissue to other parts of the body and we notice that as the tissue improves in nutrition, the fat with the subcutaneous layer becomes larger, so much so that at times it gets in the way. Apparently as the general tissue improves, tissue taken from the abdomen and put on the hand or arm will increase also. In a number of cases we have found it necessary to cut away fat which had so increased in size, and in the tissue removed the vascularity was perfect. I have under my care now a case of transplantation of fat which shows every evidence of softness of the tissue and the maintenance of the contour and vascularity. It seems that the storage capacity of the fat for carbohydrates has been transferred with the growth and is still being maintained.

Experimental Research and Medical Progress.—It may be taken as an axiom of medical science that everything of value in medicine and surgery has arisen from the applications of experimental research. Nor can future advance be made by any other method than the research method. It is true that accident may teach occasionally, as it did, for example, in the dreadful burns unwittingly inflicted on themselves and patients by the early experimenters in Roentgen-ray therapy and diagnosis. But accident is only the most blundering type of experimentation, and results obtained by its chance agency do not really invalidate the universal law that man only learns by experience, or, in other words, by research. Research is, after all, only the acquisition of fresh experience by the trained expert, usually led on to his experiment by inductance from other known facts.—Benjamin Moore, *Medical Journal of Australia.*

RENAL INFECTION

A FURTHER EXPERIMENTAL STUDY OF ITS RELATION TO IMPAIRED URETERIC FUNCTION *

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AND
JOHN WILLIAM DRAPER, M.D.
NEW YORK

Injuries, inflammation, neoplasms, and congenital defects of the ureter, urinary bladder, or associated organs could be more often successfully treated had we an effectual method of entero-ureteral transplantation. It is pointed out by Watson and Cunningham[1] after condemning all operations for diverting urine, with the single exception of Maydl's, that "the very large proportion of cases have proven fatal either as a result of the operation or because of the renal lesions which are produced later by ascending infection from the intestinal tract."

Eisendrath[2] holds that "reimplantation of the ureter into the lower bowel is impracticable on account of the irritant action of the urine on the mucous membrane, causing persistent diarrhea, and on account of the frequent occurrence of ascending infection." Carl Beck[3] adds "infection of the kidneys secondary to the operation and the difficult control of urination" as "principal drawbacks." In addition to ascending infection, colitis, difficult control of urination, shock, peritonitis following technical errors, may be mentioned to explain the general failure of entero-ureteroplasty. Maydl's block transplantation seems to have met with most success, since, as Cunningham[1] puts it, "ascending infection is less probable . . . because of the protection afforded by the preservation of the natural relations." It has been our object in this paper to study these "natural relations," define them, and estimate their respective values. It was hoped to gain information on which to found a more satisfactory technic for an entero-ureteral operation. Evidently it must be based on inductive knowledge of the obscure physiology of the ureter. Given the normal gross anatomic relations of kidney, ureter, and bladder intact, it is taught that renal infection may be urogenous.[4] Cases of probable ascending infection are reported clinically.[5] Individual opinion as to the occurrence or non-occurrence of "ascending infection" seems to be as diverse as the proven clinical cases are rare.

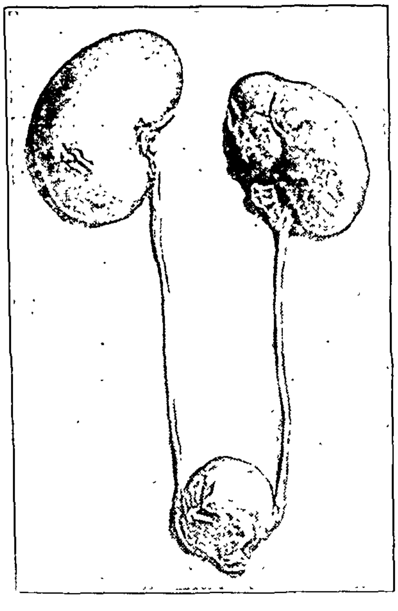

Fig. 2 (Dog 84).—Infection following cut valve and stripped ureter; typical of Series 3.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the authors' reprints.

[1] Watson and Cunningham: Diseases and Surgery of the Genito-Urinary System, Chapter on Entero-Ureteral Anastomosis; Genito-Urinary Diseases, ii.

[2] Eisendrath: The Journal A. M. A., Nov. 8, 1913, p. 1694.

[3] Beck, Carl: Implantation of Ureter into Large Bowel, The Journal A. M. A., Nov. 8, 1913, p. 1691.

[4] Blake, J. A.: Lectures Before Class in Surgery, 1910-11.

[5] Le Brigand, Henri: Contribution à l'etude de la pyélonéphrite pendant la grossesse, Paris Thèses, 1899-1900.

ESSENTIAL STATE OF BLADDER FOR ASCENDING INFECTION

Guyon and Albarran[6] pointed out that bacteriuria and retention were necessary for kidney infection. Guyon[7] emphasized bladder sensibility and abnormal contractility with coincident cystitis. Courtade and Guyon[8] emphasized retention. Brewer[9] reviewed the work of these and other investigators and concluded the essentials to be (1) chronic cystitis; (2) acute retention with spasmodic contraction of the detrusor; (3) mechanical interference with ureteral sphincter. In our experiments we have not attempted to increase whatever retention may physiologically exist in dogs, although we realize that it may be important in the production of renal infection.

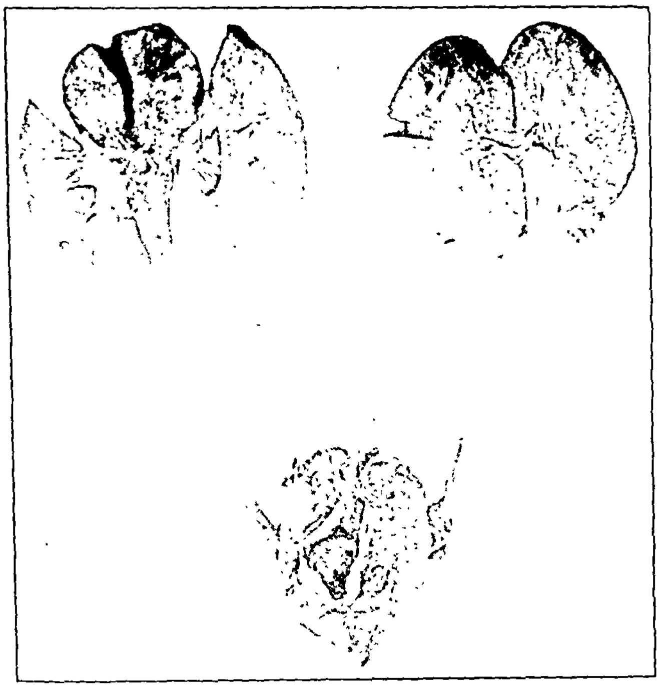

Fig. 5 (Dog 83).—Pyelonephritis following stripping ureter and cutting valve; cut surface (left) showing foci at cephalad pole.

MECHANISM OF ASCENSION

It was held by Guyon[7] in 1890 that cystitis may give rise to ascending nephritis. It is interesting to compare the findings of G. G. Smith's[10] analysis of ninety-eight cases of cystitis from the wards and the outpatient department of the Massachusetts General Hospital in which he pointed out that certainly not more than five had given rise to pyelitis by the ascending route, and that even this small number was doubtful. Renal infection from cystitis has been proved possible by different experimenters since, but the mechanism of its production is far from agreed on.

Obviously, given a suppurating bladder, infection may ascend to the kidney outside the ureter through the ureter wall or through the lumen of the ureter. If it travels outside, it may follow the course demonstrated by Samson[11] and designated vesico-utero-ovario-renal anastomosis, and follow these blood vessels; or by the lymphatics, as demonstrated by Stewart[12] in eight out of ten transplanted dogs' ureters. The infection may ascend within the ureter wall apparently only under a pathologic condition of the ureter itself, such as shown by Samson's[11] clinical case of purulent cystitis, ureteritis with exudative swelling and occlusion of the ureter and suppurative nephritis. If the infection ascends by the lumen of the ureter, several courses have been held by different investigators. It does not seem necessary to mention the method suggested by Kelly and repeated by Samson[11] of aspiration with air through the ureter during cystoscopy with the patient in the knee-chest position. Motility of the micro-organism is the means suggested by Guyon and Albarran,[6] on the basis of the difference in time of ascent between an inert colored particle and the colon bacillus; the ratio being roughly 2:1. If the organism is a coccus and therefore immotile, it is thought to ascend partly by the processes of reproduction and extension along the ureteral wall, and partly by a to-and-fro motion of the ureter itself. Orth and Jacobelli supported Guyon and Albarran. Le Brigand[5] in 1900 concluded similarly from his clinical observations. This to-and-fro movement is qualified still further as "countercurrent" and "eddy" by Adjevoli.[11] C. J. Bond[13] experimenting with insoluble dyes described a mucous current in a partially collapsed ureter. Anastalsis and reflux complete the means of possible intra-ureteral ascension. Reflux has been described as occurring in rabbits by Lewin and Goldsmith, Courtade and Guyon,[8] Jacobelli, and Marcus.[11] Jacobelli maintains that the fluid must be injected suddenly[14] into the bladder for it to ascend the rabbit's ureter. Courtade and Guyon observed reflux in dogs. Marcus further showed reflux of urine in rabbits possible by anastalsis or vesical contraction when the ureters were distended. Disse[11] explained the patency of the ureteral valves under such circumstances by contraction of the longitudinal musculature of the ureter, thus converting it into an inflexible

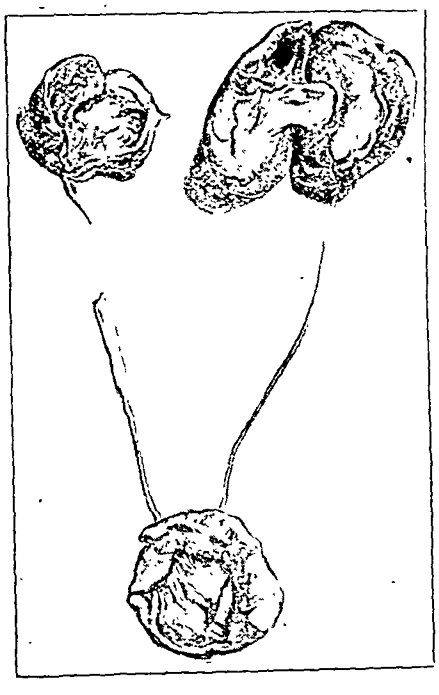

Fig. 7 (Dog 100).—Hydronephrosis following stripping of ureter.

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[6] Guyon, F., and Albarran, J.: Physiologie pathologique des rétention rénales, Tr. Assn. Franç. d'urol., 1897 and 1898, ii, 11; Anatomie et physiologie pathologiques de la rétention d'urine, Arch. de méd. expér. et d'anat. path., 1890.

[7] Guyon: Cystalgies symptomatiques de lésions rénales et pyonephroses consécutives à des lésions vesicals; influence de traitement de la vessie sur le urétéro-pyélites, Ann. de gynéc. et d'obst., 1890, xxxiv, 81.

[8] Courtade, D., and Guyon, J. F.: Sur le reflux du contenu vésical dans les uretèrs, Compt. rend. Soc. de biol., 1894, x, Series 1, p. 556.

[9] Brewer: The Present State of Our Knowledge of Acute Renal Affections, with a Report of Some Animal Experiments, The Journal A. M. A., July 15, 1911, p. 179.

[10] Smith, G. G.: Chronic Cystitis in Women Not a Disease, The Journal A. M. A., Dec. 6, 1913.

[11] Samson: Ascending Renal Infection, with Special Reference to the Reflux of Urine from the Bladder into the Ureter as an Etiological Factor in Its Causation and Maintenance, Bull. Johns Hopkins Hosp., December, 1903, p. 334.

[12] Stewart, E. F.: A Study of Ascending Infection of the Kidney Carried Out by the Method of Transplanting the Ureter into the Intestines, Univ. Penn. Med. Bull., 1911, p. 233.

[13] Bond, C. J.: Ascending Currents in Mucous Canals and Gland Ducts and Their Influence on Infection: A Study in Surgical Pathology, Med. Rec., New York, Aug. 12, 1905.

[14] Brewer's reference in The Journal A. M. A., July 15, 1911, p. 179: Sudden injection may temporarily paralyze the ureter.

tube. On the other hand, Young[15] in several cases failed to get reflux in dog's ureter after injecting the bladder with colored solution. This agrees with the findings of Draper and Braasch.[16] Samson[11] tried out anastalsis and reflux in nineteen dogs. To each bladder was attached a normal ureter, a ureteral stump, and the reimplanted cut distal end. In no case having normal valve or with valve absent did he observe reversed ureteral current. But he held reflux possible in conjunction with diseased ureter. May it not be that the amount of injury to the ureter explains the varying results of these different investigators? We have distended the dog's bladder by a 4½-foot water column and noted no reflux in normal ureter with normal valve or in stripped ureter with normal valve. Suddenly injected fluid as observed by Jacobelli was noticed by us to collect slowly and drop from the cut end of stripped ureter with cut valve.

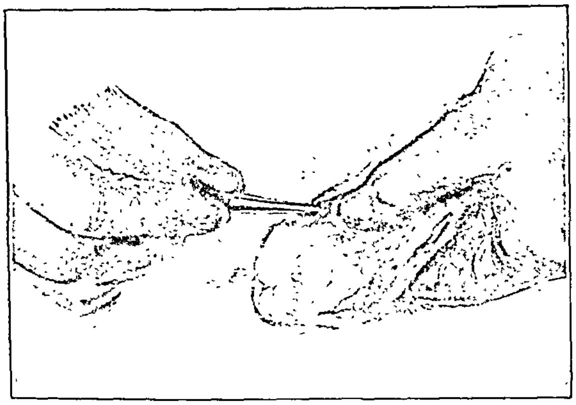

Fig. 10.—Technic of isolating and stripping ureter and irritating suppositional ureteral nerve plexus.

EMBRYOLOGY

It is known[17] that at the fourth week, the ureteric part of the kidney is apparent as a dilatation at the caudad end of the wolffian duct, near the cloaca; the nephritic tissue being represented in the sacral region. At the beginning of the second month the ureteric bud grows out against the nephritic tissue in the sacral region. By the end of the second month the renal bud has ascended to the lower part of the lumbar region, passing dorsad to the wolffian body; the ureter and its pelvic calyces can now be recognized. When we consider mammalian embryology and the close relationship of birds with their permanent cloacal arrangement to the mammals, there appears a phylogenetic as well as an ontogenetic basis for believing that the human body should be capable of assuming vicariously the recently lost function of storing urine. Furthermore, Huntington[18] calls attention to the origin of the bladder from the cloacal or intestinal space and to the relationship as shown in one of our larger American lizards, *Igriana tuberculata,* between the adult reptile and certain stages in the development of the mammals respecting the common termination of the genito-urinary and intestinal tracts.

ANATOMY

Anatomically the ureter is of course well understood. The vesical end is reinforced by a fibrous sheath which envelops the ureterovesical junction. The ureteral musculature is replaced as it reaches the vesical submucosa by longitudinal fibers arising from the bladder and paralleling the ureter within the bladder wall. The ureteral mucosa blends with that of the bladder, forming the orifice of the ureterovesical valve. The ureter is enclosed throughout in peritoneum, beneath which it derives blood, lymph and nerve supply. The blood supply has been mentioned. The lymphatics have been carefully worked out by Sakota. The nerves of the ureter are derived from the sympathetic.

PHYSIOLOGY

Physiologically much less is known. In speaking of the nerve control of the ureter Lucas[19] says:

> I believe that further research will justify the general division of the ureter into the following two portions: 1. The funnel-shaped portion cephalad to the isthmus contained in the renal pelvis and probably partaking of the nerve distribution of the kidney. 2. The straight portion extending from the isthmus to the bladder, which may be subdivided into (a) a cephalad third, containing nerve endings in its wall; (b) a middle third deficient in nerve endings, and (c) a caudad third, adjacent to the bladder and partaking to some extent in the nerve distribution of the bladder.

Von Bardeleben[20] holds that the renal plexus supplies the pelvis and the cephalad half of the abdominal part: the spermatic, the caudad half of the abdominal part; and the hypogastric, the pelvic portion. Ganglia and nerve ends he found in adventitia, large at the ends and small in the middle of the ureter. Piersol[21] and Cunningham support Bardeleben.

It is evident that the origin of muscular contractions of the ureter, whether neurogenic or myogenic is not understood, but that it is a matter of observation that rhythmical contractions do exist. They occur in peristaltic waves, which, beginning with the kidney pelvis, progress toward the bladder at average intervals of 9 seconds in the dog, according to our own observations. Urine appears to be forced into the bladder by each peristaltic contraction. These contractions appear to be quite persistent as long as the normal relations of the ureter are preserved, but vari-

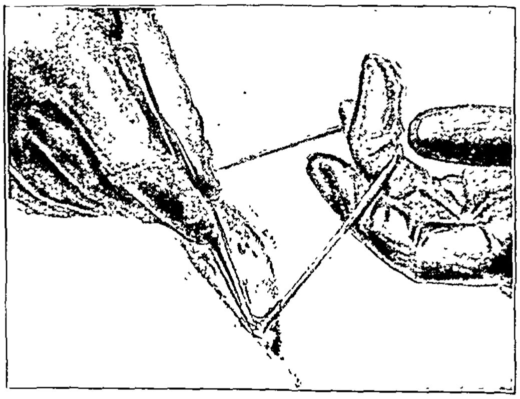

Fig. 12.—Technic of isolating and stripping ureter and irritating the suppositional ureteral nerve plexus.

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[15] Young, H. H.: Hydraulic Pressure in Genito-Urinary Practice, Especially in Contracture of the Bladder, Bull. Johns Hopkins Hosp., May, 1898, p. 100.

[16] Draper, J. W., and Braasch, W. F.: The Function of the Ureterovesical Valve, THE JOURNAL A. M. A., Jan. 4, 1913, p. 20.

[17] Bailey: Text-Book of Histology, p. 208.

[18] Huntington: Genetic Interpretation of Some Variations of Genito-Urinary Tract, Harvey Lectures, Series 2, 1906.

[19] Lucas: Physiological and Pharmacological Studies of the Ureter, Series 3, *Am. Jour. Physiol., July 1, 1908.*

[20] Von Bardeleben: Handbuch der Anatomie des Menschen, vii, Part 1, p. 112.

[21] Piersol: Human Anatomy, p. 1893; Normal Histology, p. 201.

able in force and frequency when these are disturbed. Moreover, this irregularity in ureteral peristalsis seems to vary in direct proportion to the degree of trauma to the organ. We believe that a complete removal of the ureter from its retroperitoneal bed affords a valuable technical index for the experimental study of renal lesions. It has evidently entered as an unobserved and uninterpreted complex into much of the clinical and experimental study reported to date without having been given due consideration as a causative factor. In brief, ureteral dislodgment causes a condition roughly analogous to so-called "adynamic ileus" of the gut.

EXPERIMENTAL PROCEDURE

We present for consideration the following proposition: Given a foreign body cystitis the local factors determining infection are:

1. The ureterovesical valves, and
2. The peristalsis of the ureter.

These factors may be made experimental variants as follows:

By 1. Cutting of the valve.
2. Disturbance of ureteral peristalsis.
3. *Combination of* 1 *and* 2.
4. Ureteral circumcision.
5. Combination of 2 and 4.
6. Combination of 1 and 4.
7. Combination of 1, 2 and 4.

These may be considered in detail as regards experimental findings.

Our experiments have been made on dogs, forty in all having been used exclusive of Draper-Braasch series. Each dog had received a maximum dose of morphin sulphate per kilo of body-weight, followed by profound ether anesthesia. Each case was subsequently nephrotomized, and an appropriate section preserved for a microscopical index of normal kidney.

TABLE 1.—EFFECT OF STRIPPING URETER AND CUTTING VALVE *

RENAL INFECTION

Case No.	Gross Findings	Microscopic Findings	Cause of Death	Days of Life
74	Normal	Normal	*Hemoperitoneum*	0
80	Congest.	Glom. congest.	Hemoperitoneum	2
72	Pyelonephritis	Sup. nephritis; abscesses; sup. ureteritis	Pyelonephritis	7
77	Pyelitis	Cong. parenchym. swelling	Pyelonephritis	3
73	Pyelonephritis	Sup. nephritis	Pyelonephritis	23
89	Congested kidney	Parenchym. degeneration; *congestion*	....	20
88	Parenchym. degeneration	Perenchym. degeneration; hydropic degeneration; pronounced	Parenchym. degen.	11
83	Pyelonephritis	Sup. nephritis; abscesses; tubules distended with pus cells; glom. free	....	13
81	Pyelitis; congested kidney	*Glom. congest.*	....	18
84	Chr. nephritis	....	Ether	121

* This and following tables represent work *done* at the Experimental Surgical Laboratory, New York University, 1913-14.

TABLE 3.—EFFECT OF CIRCUMCISING URETER

RENAL INFECTION

Dog No.	Gross Findings	Microscopic Findings	Cause of Death	Days of Life
110	Normal	Hemorrhagic kidney; congest. glomeruli	....	5
112	....	....	Anesthetic	0
91	Normal	....	Leakage	0
109	Normal	Normal; congest glomeruli	Peritonitis following perforation of bladder	12
117	Normal	Only one kidney was *found at operation.* Other kidney had been replaced by a *parasitic cyst. Parasite* was later identified as *Distophyme renal*	Leakage	60
106	Normal	Normal	Pneumonia	60
92	Normal	Normal or moderately congested	Shock	1½

TABLE 4.—EFFECT OF CIRCUMCISING AND STRIPPING OF URETER

RENAL INFECTION

Dog No.	Gross Findings	Microscopic Findings	Cause of *Death*	Days of Life
129	Pyonephrosis	Purulent nephritis	Pyonephrosis	29
*131	Hydronephrosis; hydro-ureter	Parenchym. degeneration very marked with conv. tubules crowded with granular casts; glomerular congest.	Hydronephrosis	6
68	Normal	Coagulated albuminous, exudate in Bowman's caps.	Leakage	2

* Colon bacillus was identified in both left and right kidneys. The presence of this organism in both kidneys was probably due to postmortem invasion.

TABLE 5.—EFFECT OF CIRCUMCISING URETER AND CUTTING VALVE

RENAL INFECTION

Dog No.	Gross Findings	Microscopic Findings	Cause of Death	Days of Life
*122	Hydronephrosis; hydro-ureter	Glomerular and intertubular congestion; cloudy swelling; parenchymatous degeneration.	Leakage	2
123	....	....	Anesthetic	0
113	Normal	Glomerular congest.; cloudy swelling	Infectious skin disease	50

* Ureter was found adherent to circularly incised wound of bladder 1 cm. distant from ureterovesical junction. This accounted for condition of kidney and ureter.

TABLE 2.—EFFECT OF STRIPPING URETER

RENAL INFECTION

Dog No.	Gross Findings	Microscopic Findings	Cause of Death	Condition of Ureter	Bacterial Findings	Days of Life
103	Hydronephrosis	Congestion	Intussusception	Patent	Coccus colon-like organism	7
70	Hydronephrosis	Dilated tubules	Hydronephrosis	Stenosed	Coccus colon-like organism	21
17	Hydronephrosis	Dilated tubules	Hydronephrosis	Patent	Coccus colon-like organism No change *in* fixation test for colon	....
54	Hydronephrosis; hydro-ureter	Nephritis	Hydronephrosis	Patent	Culture omitted	25
69	Pyonephrosis	Purulent nephritis	Pyonephrosis	Stenosed	Coccus colon-like organism	29
21	Normal	Glomerular congestion	Perforation of bladder	Patent	No change in fixation test for colon	24
22	Parenchymatous	Parenchymatous	Peritonitis (technical)	Patent	No change in fixation test for colon	8
24	Interstitial nephritis	Productive nephritis	Pneumonia	Patent	Culture omitted	121
100	Hydronephrosis	Nephritis	Hydronephrosis	Stenosed	Culture omitted	69

TABLE 6.—EFFECT OF CIRCUMCISING AND STRIPPING URETER AND CUTTING VALVE

RENAL INFECTION

Dog No.	Gross Findings	Microscopic Findings	Cause of Death	Days of Life
*139	Normal	Congestion; bacteria in kidney	....	3
*151	Normal	....	Leakage	1
153	Normal	Normal	....	18
152	Hydronephrosis following ureteral calculus Enlarged; lobulated; tense. Contained 80 c.c. clear fluid Paren.—shell Cal.—dilated Pus.—none	Typical hydronephrosis; compression and atrophy of tubules and glom.; moderate cellularity and plus conn. tissue	Euthanasia; great emaciation	57

* The streptococcus and colon bacillus were found in both kidneys of No. 139. Streptococcus was found in left kidney of No. 151. No bacteriologic examination of right kidney of No. 151 was made. The presence of these organisms appeared to be due to post-mortem invasion.

1. *Cutting of the Ureterovesical Valve.*—See Draper-Braasch series. A further technical point in valve cutting that seems worthy of note is that in attempting to cut the valve either do not traumatize the valve area at all, which ensures the natural color relations, or traumatize severely, which converts the valvular orifice into an ischemic ring.

Result (10 cases): No substantial kidney change.

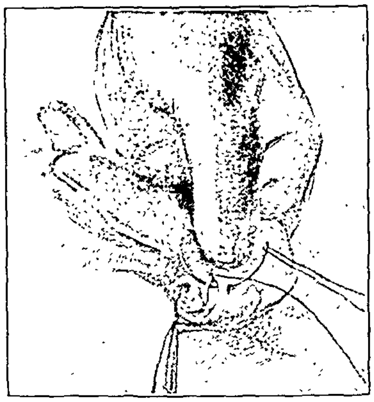
Fig. 14.—Technic of further step in circumcising ureter.

2. *Disturbance of Ureteral Peristalsis.*—In nine cases the ureter was removed from its retroperitoneal bed, stripped of every recognizable vessel, nerve and fascial connection from kidney pelvis to bladder insertion. In order to make sure that it was absolutely freed from all nervovascular connections throughout its course, as well as to disturb the nerve plexus in the adventitia of the ureter, the ureter was rubbed snugly with dry gauze throughout. It was then allowed to drop back into the peritoneal cavity.

In each case of these series a cubical foreign body infected with autogenous colon bacilli and other organisms, and of such shape as not to cause valvular ureteral obstruction, as suggested by Draper and Braasch, was placed in the bladder through a mesoventrad incision so that, as subsequent examinations of urine and bladder revealed, a purulent cystitis was produced.

Result (9 cases):[22] Hydronephrosis in various stages.

3. *Combination of 1 and 2.*—Result (10 cases): Pyelonephritis may follow. But the lower segment of straight portion of the ureter is supplied by the sympathetic through the vesical plexus. To eliminate a possible nerve control through such recurrent fibers the following observations were made by

4. *Ureteral Circumcision.*—In circumcising the valve an incision was carried about the ureterovesical implantation through the serosa, muscularis and submucosa to the firm, comparatively resisting, vesical mucosa. When completed this incision was carefully closed by continuous suture.

Result (7 cases): No kidney change.

5. *Combination of 2 and 4.*—Result (3 cases): Hydronephrosis.

6. *Combination of 1 and 2.*—Result (3 cases): No kidney change.

7. *Combination of 1, 2 and 4.*—Result (4 cases): No kidney change.

Therefore the severing of whatever nerve supply enters the ureter from the bladder appears to play no essential part in the possible renal infection.

CONCLUSIONS

Given an infected bladder and making due allowance for systemic and local resistance:

1. The ureterovesical valves can be cut without resulting renal infection. Duration of life indefinite.

2. If the ureter is circumcised to but not through the vesical mucosa the kidney remains normal. Duration of life indefinite.

3. Ureteral traumatism resulting in greater or lesser degrees of impairment of function as indicated by prostaltic paralysis, resulted in 75 per cent. of cases in hydronephrosis which in the early stages were not infected: a mechanically changed kidney which might or might not be infected later. Average duration of life, 30.33 days.

4. If the valves were cut and the ureters were paralyzed, hydronephrosis did not occur, but the kidneys underwent a primary infective change in 50 per cent. of cases. Average duration of life, 13.57 days.

At the beginning of this paper it was stated that our object was to study, define and estimate the respective values of the "natural relations" of the ureter.

The integrity of the "factor of safety" which protects the kidneys both from urogenous infection and from hydropic degeneration appears to depend directly on the unimpaired prostalsis of the ureter; indirectly on the integrity of the ureterovesical valve and most interestingly on the relationship btween these physiologic and anatomic barriers.

The authors acknowledge the constructive criticism of Prof. George D. Stuart and Prof. Douglas Symmers; also the detailed assistance of Dr. A. G. Bennett and Dr. W. C. Noble of the department of bacteriology.

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ABSTRACT OF DISCUSSION

Dr. J. W. Draper, New York: I am glad to corroborate and endorse everything that Dr. Barber has said. The work is not yet finished. All these experimental studies seem never to come to an end. Nevertheless, I believe we are justified in saying that one may cut the valve without getting an infected kidney. Of course, all of these dogs operated on have been treated just as Dr. Braasch and I treated the first series, namely, in the bladder has been placed a cubical piece of coal which has been rubbed in the dog's own feces, thus securing an autogenous infection and a condition which is allied to, but probably not identical with human cystitis. Nevertheless, they pass a great deal of pus in the urine. Such a series will go on without any renal infection or general infection. If, however, in addition to cutting the valve, the ureter is deinnervated and devascularized by Dr. Barber's method, one is practically certain to get, or we have, in this last series, obtained quite constant results, namely, infection of the kidney. We are not prepared to say just how it occurs, but we are prepared to say that the kidney becomes infected. If, on the other hand, as Dr. Barber has said, the ureter is simply lifted from its bed, with an accompanying devascularization and deinnervation, except possibly for recurrent innervation that may come from the bladder—because we have not been able to cut through the entire mucosa without killing the dogs, and the circumcision which Dr. Barber has devised most ingeniously cuts off everything except that small vestigial remnant—one obtains an uninfected hydronephrosis, and one which differs somewhat from the transitory hydronephrosis which occurs after ligation or other mechanical obstruction of the ureter. Of course, we are not in a position to say positively that there is no mechanical obstruction to the ureter as a result of this extensive handling. It is quite conceivable that there may be considerable swelling, enough swelling of the lining cells to make a transitory semimechanical obstruction; but we believe that it is due to the complete paralysis which we have shown to exist as a result of the procedure.

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[22] Barber, Stuart and Symmers: Hydronephrosis: An Experimental Study.

Dr. W. F. Braasch, Rochester, Minn.: The experiments carried on by Dr. Barber explain, at least partially, certain factors in the physiology of the ureter with which we have not been acquainted heretofore. It is evident from his experiments that the action of the ureteral peristalsis is important in preventing ascending infection. These experiments should be of practical value in connection with operations on the ureter. The Maydl and Coffey operations which have proved to be the most successful, in which the ureter is implanted in the bladder-wall, are both made with the idea of preserving the so-called ureterovesical valve. The importance of this valve in the first series of experiments on the ureter made by Draper and Braasch was not appreciated. We inferred that the preservation of this valve was of no importance, but Dr. Barber has shown that it is important if the blood and nerve-supply of the ureter above is not preserved. So the important point is that, while with the Maydl and Coffey operation the blood and nerve-supply may be destroyed, the ureterovesical valve is preserved and infection does not occur. That dilatation and insufficiency of the ureterovesical orifice is not of much importance in preventing ascending infection, provided that the ureter above is normal, is proved by a number of cases of cystitis in which, on cystoscopic examination, the ureteral orifice was greatly dilated. The bladder-fluid could be seen entering the ureter and returning again with each respiration and the pyelogram showed the bladder ureter to be greatly dilated. The ureter above the bladder was quite normal and with the catheter high up in the ureter the urine came from the catheter with perfect peristalsis, showing that the lower ureter is not of much importance provided the ureter above is normal. Dr. Barber's experiments should clear the way for more successful reimplantation of the ureter, which is not infrequently necessary.

Dr. John H. Cunningham, Jr., Boston: It has been fairly well established by many clinical observations and experimental studies that renal infection as an ascending infection by continuity from an infected bladder is rare, and when it does occur, is dependent on a disturbance of the normal function of the ureteral openings, associated with urinary retention and cystitis. With the preservation of the normal relations of the ureteral openings a protection to an extension of infection from the mucosa of the bladder up the ureter or the possibility of a reflux of infected urine must be discarded. Several years ago Dr. Garceau and I made a series of experiments bearing on this point. We injected a methylene-blue solution into the bladder of anesthetized dogs, varying the degree of pressure from a few pounds to that sufficient to rupture the bladder, and in no instance did the dye find its way up the ureter or even beyond the ureteral openings. This work has been repeated by Young, Draper and Braasch with the same results. On the other hand, with any disturbance of the normal condition of the ureteral openings, either congenital or acquired by changes in the musculature from long-standing retention of urine, ulcerations or new growths involving them, or ureteral calculi impacted near the terminal end of the ureter so that the ureteral mouth becomes patulous, renal disease may take place by an ascending infection. As has been stated, the essentials for ascending renal infections are a combination of factors, namely, an infected bladder, with an interference with the function of the ureteral sphincter. Whether or not the infection of the kidney may take place from an infected bladder by way of communicating lymphatics is chiefly speculative, although there is some experimental evidence that such is the case. This naturally brings us to ascending renal infection in those instances in which, by operative procedures, the normal relations of the ureteral openings are disturbed. All operative procedures except Maydl's, which removes the trigon with [illegible] openings undisturbed, destroy the muscular mechanism which prevents ascension from the bladder to the kidneys by way of the ureters, and the clinical observations show that the large proportion of such cases prove fatal as the result of the operation or because of the renal infection which occurs later by ascending infection. This includes the cases of ureteral implantation on the surface of the skin, in the vagina in the female, and in the intestinal canal. In fact, many instances in which Maydl's operation of implanting the trigon into the intestinal canal with the ureteral orifices undisturbed have resulted in ascending renal lesions. The theory of this operation is correct, yet it is difficult of performance, and it is not beyond a most likely probability that the ureteral mechanism is disturbed in its performance. It is for this reason that Dr. Watson and I have maintained that double nephrostomy is preferable to bilateral ureteral implantation by whatever method. I cannot agree with Dr. Barber that the implantation of the ureters into the intestinal canal has any sound foundation, because of the embryologic feature of their once having been a part of the common excretory apparatus, the cloaca. Nor do I believe that the phylogenetic relationship of birds and mammals is any sound argument that the human may, on an ontogenetic basis, assume that which is a phylogenetic fact, because ontogeny is simply a reflection of phylogeny, and ontogenetically there is a further specialization of tissue which renders the comparison of conditions from an ontogenetic and phylogenetic point of view entirely separate. With regard to the experimental features, Dr. Barber has once again proved that a disturbance of the sphincteric mechanism at the ureteral outlet into the bladder may result in renal lesions, and has emphasized that ureteral traumatism results in an impairment of ureteric function and produces kidney changes which frequently lead to subsequent infection of the impaired organs. He has shown that disturbance of the natural relations of the ureters proper and their valves lessens the value of the kidney and leads to subsequent infections. This important piece of experimental investigation corroborating the already established clinical facts strengthens my belief that, when it is necessary to dislodge the ureters permanently, bilateral nephrostomy is to be preferred to ureteral implantation by whatever method, because, by this method of diverting the urinary stream, renal infection of a serious character is less likely to take place. It is by just such pieces of experimental work along the lines of comparative pathology that we shall find the explanations of clinical observations and through them receive information helpful to our understanding of clinical facts.

Dr. D. N. Eisendrath, Chicago: I made quite a study of the lymphatics of the ureter in connection with some recent experimental work. We know that there is a set of lymphatics in the mucous membrane passing in and forming a network around the epithelial cells of the ureter, and communicating with the lymphatics of the submucous layer, which again communicate with the lymphatics in the muscular and fibrous coverings. The interesting problem to me is that, in spite of the fact that Dr. Barber cut through all of the coats except the mucous membrane by his incision above the bladder, leaving only the mucous coat, he should have had such an ascending infection as he has shown. The old theory was that all of the infections traveled from the bladder to the kidney by reason of continuity in the mucous membrane. It looks as if his work were a substantiation of the old theory, whereas the new view is that infections go by means of the deeper lymphatics.

Dr. W. H. Barber, New York: There was no increased fixation for colon bacillus from the time the dogs were first operated on until a week had elapsed after operation and the organisms found on culture from the bladder, ureter or kidneys were the colon bacillus, the streptococcus, or both.

Answering Calumny.—If a man has reported to you, that a certain person speaks ill of you, do not make any defense to what has been told you; but reply, the man did not know the rest of my faults, for he would not have mentioned these only.—*The Encheiridion.*

NECROTIC BONE AND THE SUBSEQUENT CHANGES WHICH IT UNDERGOES [*]

D. B. PHEMISTER, M.D.
CHICAGO

Bone destruction may be molecular, to which the name of caries is applied, or *en masse,* when it is spoken of as necrosis. Caries is usually produced by the milder and slowly acting circumscribed affections in which bone destruction keeps pace with bone death. On the other hand, necrosis results from the more rapidly acting and severer processes in which a more or less extensive area becomes involved and destroyed in a comparatively short time and which persists for an indefinite period before removal. Before considering the special subject of necrotic bone and its subsequent changes it is well to glance briefly at the subject of tissue necrosis in general in order to determine the differences which obtain for bone, and the reasons for their occurrence.

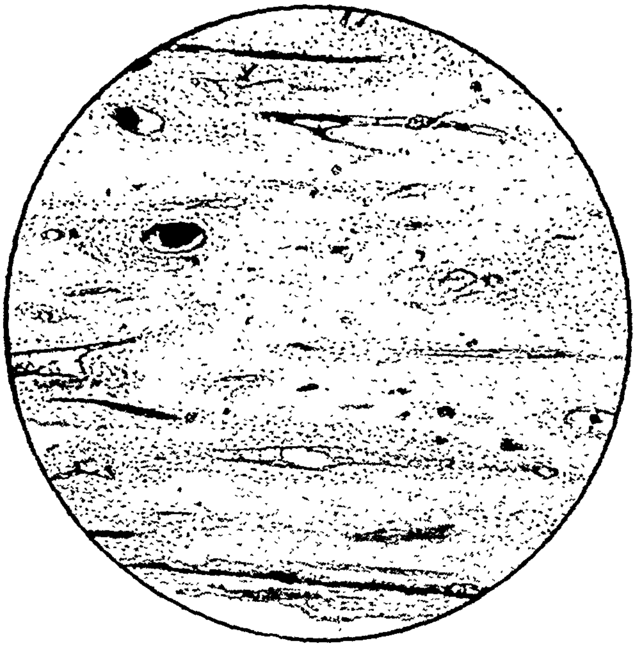

Fig. 1.—Transplant 164 days old showing the dead cortex about one-half substituted by new bone.

The death of tissue *en masse* occurs either from infection or from circulatory disturbances which may be acute or chronic in nature. When due to an acute infection the necrotic tissue is usually rapidly broken down by the action of cytolytic agents and to a less extent of phagocytes, and with the other products of inflammation makes a purulent or ichorous accumulation. Such accumulations are either discharged from the body or are slowly absorbed. Necrosis in chronic inflammatory processes, as tuberculosis and syphilis, consists more in a death of the hyperplastic granulomatous tissues which have formed than of preexisting cells affected by the process. It results in the formation of caseous material, the fate of which may be any one of the following: liquefaction and discharge, absorption, encapsulation or calcification.

Necrotic tissue resulting from circulatory disturbances behaves differently according to the presence or absence of infection. If in such tissue an infection occurs, the destructive changes are accelerated, and combined with the inflammatory reaction, abscess or moist gangrene results. If no infection is present, as in the case of bland infarcts of the kidney and spleen, the necrotic tissue persists as a soft cheesy mass which is slowly replaced by an ingrowth of the surrounding connective tissue.

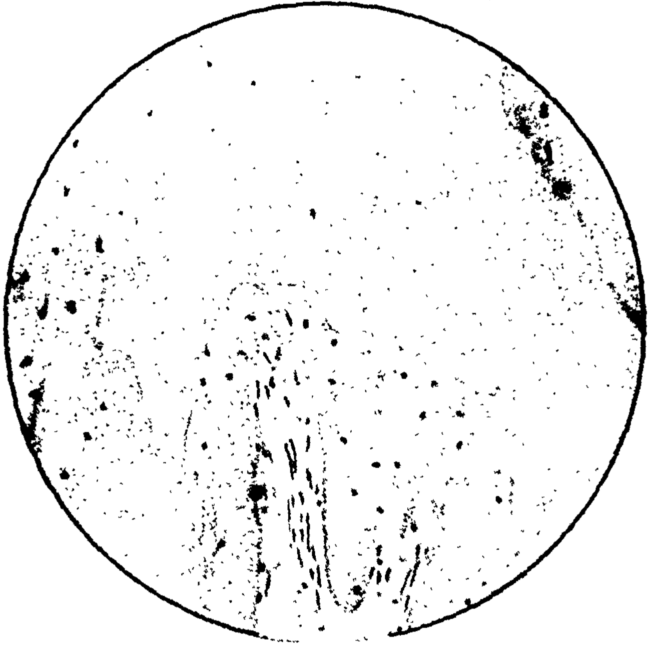

Fig. 2.—Same transplant as shown in Figure 1 under high power.

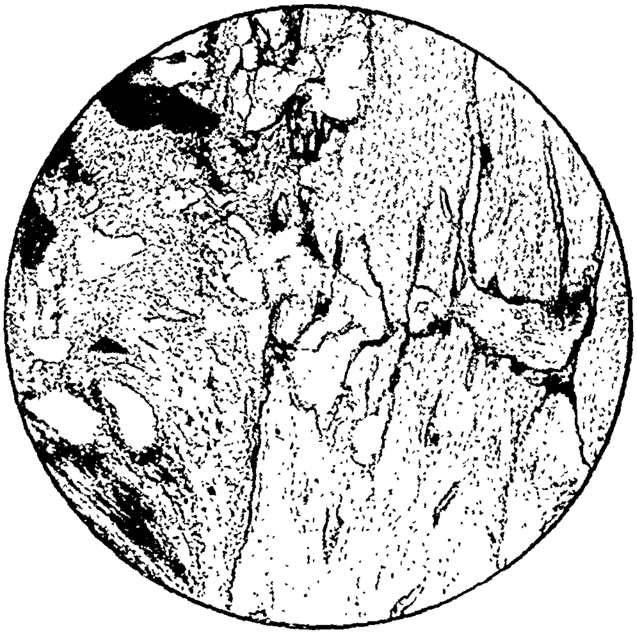

Fig. 3.—Transplant into soft parts, 199 days old, showing some absorption but no substitution by new bone.

If necrotic bone is studied according to this same classification, marked differences will be seen between its behavior and that of necrotic soft parts. These differences are observed chiefly in the manner of removal and in the substances which replace the necrotic material. This is because of the calcareous nature of the bony stroma. The soft parts of the bone, that is, the bone-cells and the contents of the vascular canals and porous spaces, break down and are absorbed in the same way as necrotic soft parts in other portions of the body. The stroma, 60 per cent. of which consists of calcium salts, resists the ordinary rapidly acting lytic agents, persists for a long period and requires a special process for its removal. Comparatively little is known of the chemical process by which bone is absorbed, but according to Wells it varies directly in proportion to the carbon dioxid content of the surrounding media and cells. There has been a general misconception as to the nature of the osteoclasts or cells which produce the absorption. Most of them are ordinary fibroblasts and in the absorption of aseptic necrotic bone but few giant-cells are to be seen. In septic processes, however, large numbers of giant-cell osteoclasts are found.

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[*] Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[*] From the Surgical Clinic, Rush Medical College.

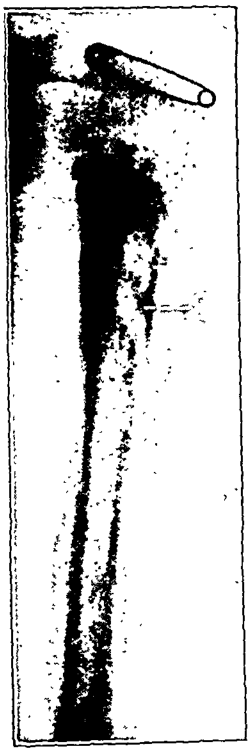

Fig. 4.—Extensive osteomyelitis of humerus with marked involucrum formation and only a small sequestrum (s) at upper end.

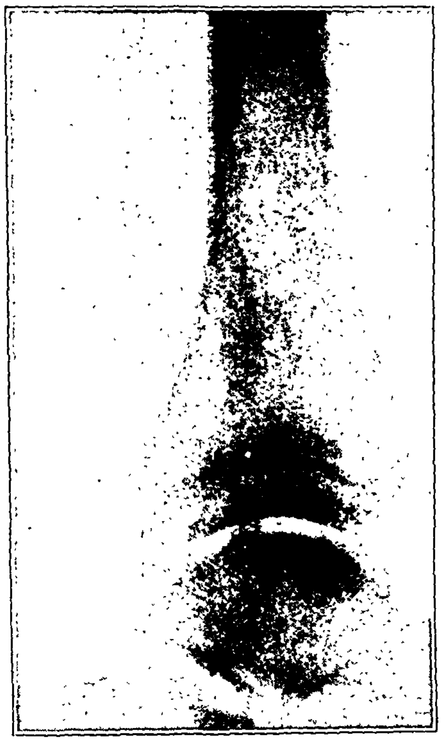

Fig. 5.—Osteomyelitis of fibula showing involucrum and some rarefaction of old cortex.

Necrosis due to circulatory disturbances is best exemplified by bone transplants. When living bone is transplanted, the nutritional disturbances are so great that only the unossified peripheral portions, that is, the periosteum and medullary contents, and the more superficially located osseous cells, survive. The great bulk of the compact bone undergoes necrosis. The fate of the necrotic portion varies with the location of the transplant according to Roux's law of functional adaptation. If the transplant is placed in a bony defect where it has a function to perform it undergoes the following transformation: The surviving osteogenetic cells proliferate, revascularization of the haversian canals occurs, the old cortex is gradually absorbed and replaced by new bone. This is the so-called creeping substitution which was first pointed out by Barth. Figure 1 shows the transformation in a transplant at the end of 164 days. About one-half of the necrotic bone has been absorbed and replaced by new. Figure 2 is a high-power view of the same. If the transplant is placed into the soft parts where it has no function to perform, the surviving portions remain inactive, producing only a very small amount of new bone, no transformation of the transplant occurs, and the necrotic cortex is slowly absorbed by the surrounding connective tissue. This is illustrated in Figure 3, of a 199 days' old transplant.

In the transformation which goes on in aseptic transplants, deposition of new bone keeps pace with old bone absorption, so that the newly formed bone is as dense as the original.

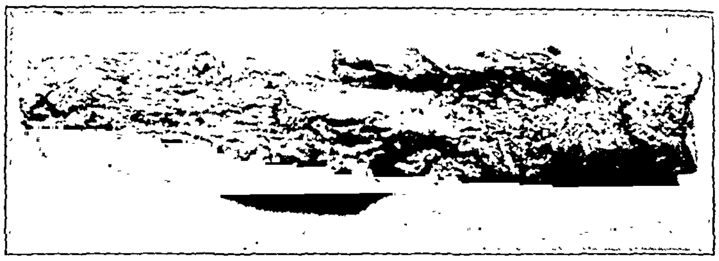

Fig. 6.—Excised shaft of fibula shown in Figure 5. Note involucrum and sequestrum.

Necrotic bone due to infection undergoes a variety of changes according to the cause.

OSTEOMYELITIS

In osteomyelitis the inflammatory process invades the bony cortex resulting in exudation, thrombosis in its nutrient vessels, superficial accumulation of an exudate and necrosis of a varying amount of the shaft, depending on the severity of the process. The changes which the necrotic portion may undergo are variable. In the region where the inflammatory process is severest, the bone is so extensively damaged that it becomes separated from the surrounding portions as a sequestrum. It may be cast off through a fistulous tract by the action of granulation tissue and an exudate; it may be encased by an involucrum and keep up a discharging sinus, or it may be gradually absorbed by the surrounding granulations. In case absorption occurs rather rapidly the place of the sequestrum may be filled

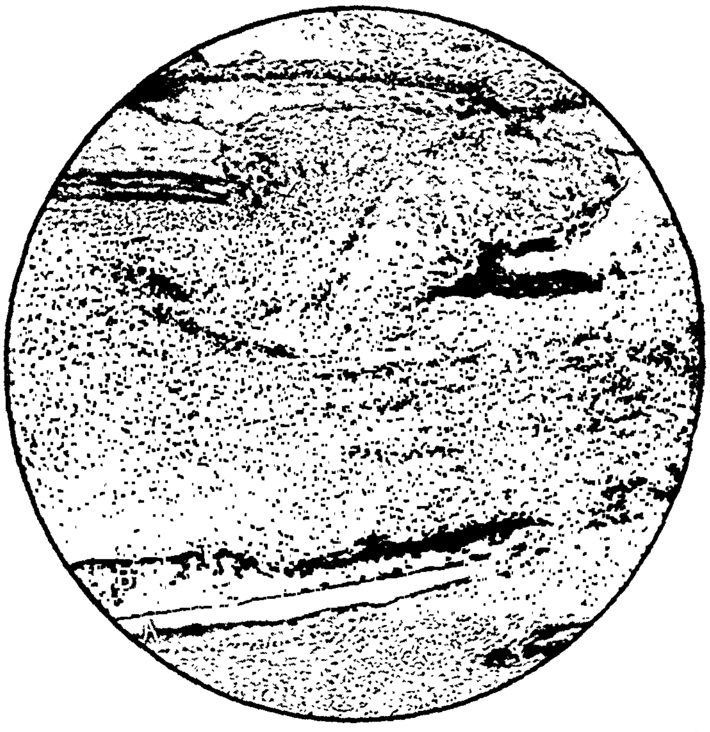

Fig. 7.—Dead cortex in bone shown in Figure 6 away from sequestrum, undergoing absorption and substitution by spongy new bone.

in by new bone, but if the process extends over a long period marked osteosclerosis of the walls occurs, the cavity does not fill in, and a chronic bone abscess results. This sclerotic condition of the walls preventing filling in of the cavity is the explanation of many fistulas which persist after sequestrotomy.

Necrotic bone in which inflammatory reaction is not so severe does not become separated as a sequestrum. The inflammatory signs in it gradually subside. Bloodvessels and granulations containing osteogenetic cells grow into the canals from the surrounding involucrum, absorb the necrotic portions and deposit some new bone, thereby transforming the necrotic into a living area. This transformation differs materially from that which occurs in aseptic transplants, in which as much new bone is deposited as old bone is absorbed. In the substitution of the quiescent necrotic portions in osteomyelitis, absorption is much more rapid and extensive than new bone formation; consequently during the early stage the newly transformed portion is spongy in character. In some of the milder cases of osteomyelitis none of the necrotic bone is separated as a sequestrum, all of it being gradually invaded and replaced by new bone. This accounts for the fate of much necrotic bone which according to Roentgen findings is seen to exist, but which is not cast off as a sequestrum, or removed by operation. Figure 4 is of a suppurative osteomyelitis 3½ months old, with an extensive involucrum along the shaft suggesting considerable necrosis of the cortex. At operation only a small sequestrum was found at the upper end, after the removal of which the patient went on to recovery. No doubt the necrosis was more extensive than this and some of it underwent substitution.

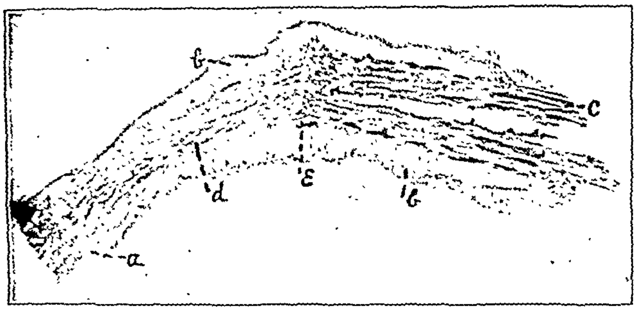

Fig. 8.—Infected transplant with healed fracture through middle portion: *a*, union between transplant and shaft; *b*, involucrum about transplant formed from its periosteum; *c*, sequestrum of upper end of transplant; *d*, dead cortex being absorbed; *e*, fracture in transplant.

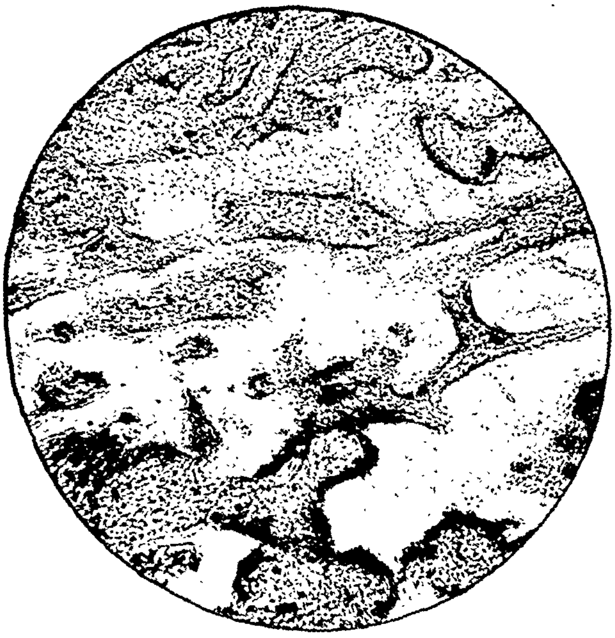

Fig. 9.—Showing rapid absorption of dead cortex with some substitution by new bone.

Figure 5 is of a suppurative osteomyelitis of the lower end of the fibula 2½ months old. There is an extensive involucrum about the diaphysis, a sequestrum of the lateral portion of the cortex, and some rarefaction of cortex on the mesial side. The entire diaphysis including involucrum which was excised by the surgeon is shown in Figure 6. On longitudinal section the mesial side presented no sequestra, but microscopic examination shows a part of its cortex to be necrotic. Rapid absorption is occurring with the deposition of a much smaller quantity of new bone, the ultimate result of which would have been a renewed cortex of spongy bone. Figure 7 shows the combination of dead bone absorption and new bone formation which is going on.

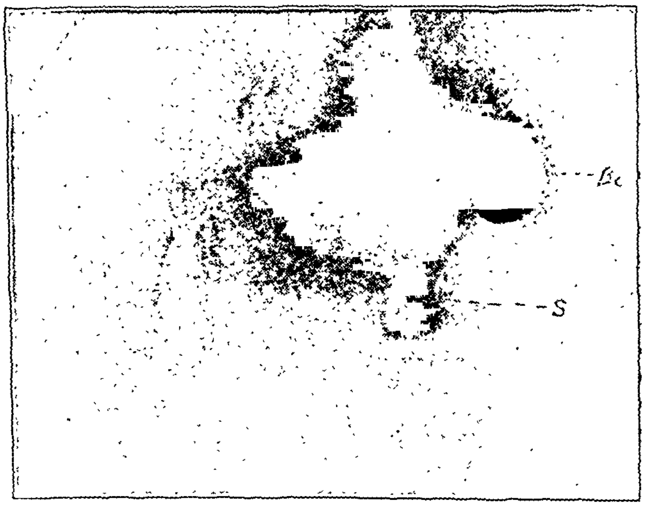

Fig. 10.—Calcified sequestrum casting heavy shadow in tuberculosis of knee. *S*, sequestrum. *Bi*, bismuth paste.

INFECTED TRANSPLANTS

Infection of a transplant may produce various results. If it is severe and involves the entire field of operation, death and sequestration of the entire transplant results, which necessitates its removal. However, if the infection is mild or confined to one end only, a very different condition results. The transplant in most of its length takes, but an osteomyelitis is set up in it, resulting in marked proliferation of the superficial cells which survived, the formation by these cells of an involucrum about the transplant, and rapid absorption of its compact bone, with some new bone formation, producing the type of transformation in the cortex already seen in the necrotic bone of osteomyelitis. In case one end of the transplant is severely infected, it may be separated as a sequestrum and require removal. Such a 75 days' old infected transplant into the ulna of a dog is shown in Figure 8. (There is marked infection and non-union at the upper end where a sequestrum 1.5 cm. had formed.) The rest of the transplant, which has a united fracture through its middle portion, shows osteomyelitic changes. There is an involucrum about it, and marked absorption of the necrotic cortex is occurring with only a small amount of substitution, as shown in Figure 9. This shows that clinically a transplantation may be successful even in the presence of an infection.

TUBERCULOSIS

Most bone destruction in osseous tuberculosis is by caries, in which the dead tissue is absorbed as rapidly as it is formed. More or less extensive areas of necrosis develop either as a result of rapid tissue invasion and caseation in a severe process, or by the formation of a cone-shaped infarct from the plugging of the arterial supply to the involved region. Whether the vascular obstruction is due to embolism, as originally asserted by König, to obliterating endarteritis, or to the ingrowth and pressure of the tuberculous tissue is a disputed point. In any event the infarcted area becomes infected and its medullary space is filled with caseous material. It is separated into a sequestrum from the surrounding living bone by a zone of tuberculous granulation tissue.

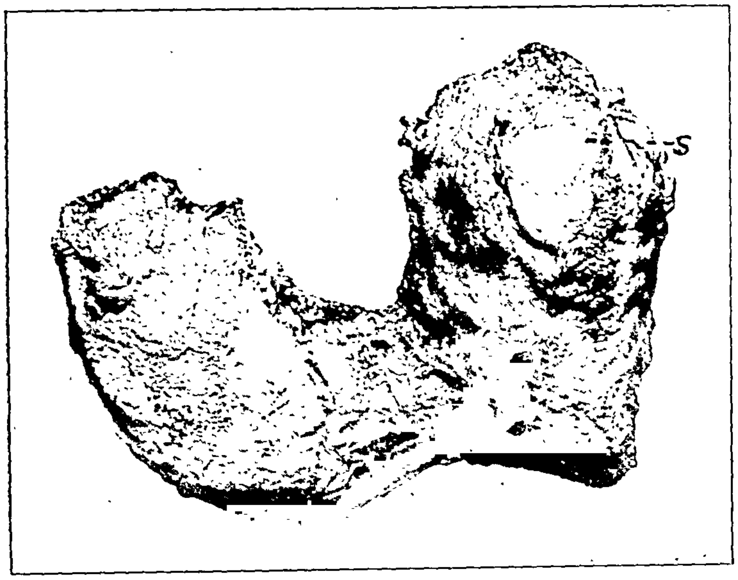

Fig. 11.—Excised condyles of bone shown in Figure 10. *S*, base of sequestrum.

The subsequent changes which such an area undergoes are variable and differ much from those occurring in necrotic bone in osteomyelitis. In some instances tuberculous granulation tissue invades the sequestrum and breaks it down into bone sand, which is either discharged or eventually absorbed, leaving a cavity in the end of the bone bordering on the articular surface or epiphyseal line and filled with granulations or with an exudate and which later is rarely filled out by new bone. In others the sequestrum may become encapsulated and remain undisturbed for months or years, although such an area is apt to contain a certain amount of tuberculous granulation tissue. A sequestrum of long standing casts a heavier shadow than the surrounding living bone. This is partly due to the fact that it is formed early in the disease when the bone possesses its normal density, and that subsequently as a result of the presence of the tuberculous infection and disuse, marked atrophy occurs in the surrounding living bone. Some of these sequestra, however, cast heavier shadows than the corresponding bone on the well side, and the normal arrangement of trabeculae is obscured. Cheyne states that this is due to early new bone formation in the involved area before necrosis sets in. Histologic examination reveals three specimens of which I have made an entirely different explanation. The sequestra contained about the normal amount of trabeculated dead bone, but there was more or less *extensive calcification* of the necrotic material filling the marrow spaces, which is the explanation of the increased density.

Figure 10 shows a cone-shaped area in the region of the external condyle of the femur casting a heavy shadow. Figure 11 is a photograph of the specimen removed by Dr. Dean Lewis at operation. Figure 12 shows a section passing through the markedly atrophic living bone, the zone of tuberculous granulation tissue and the dense sequestrum. Figure 13 is a photomicrograph of the sequestrum showing necrosis of both bone and articular cartilage, and marked calcification of the necrotic tissues filling the marrow spaces. Figure 14 shows the heel of a boy with tuberculosis of the right ankle of three years' standing. A large sequestrum is seen in the os calcis which on comparison casts a much heavier shadow than the well bone on the opposite side. Histologic examination of the removed portions showed extensive calcification in the marrow spaces.

This phenomenon has been noted by other observers, but extremely scanty mention is made of it in the literature on the pathology of bone tuberculosis. I am convinced from these histologic examinations and from a number of roentgenograms of tuberculous joints showing similar dense infarcts from which no tissues were removed that it is of not infrequent occurrence. I have not seen and find no record of calcification occurring in necrotic bone, the result of other diseases. The effect of calcification on the sequestrum, as in the calcification of other diseased foci, is to render it less harmful, so that it must be regarded as a reparative process. If the surround-

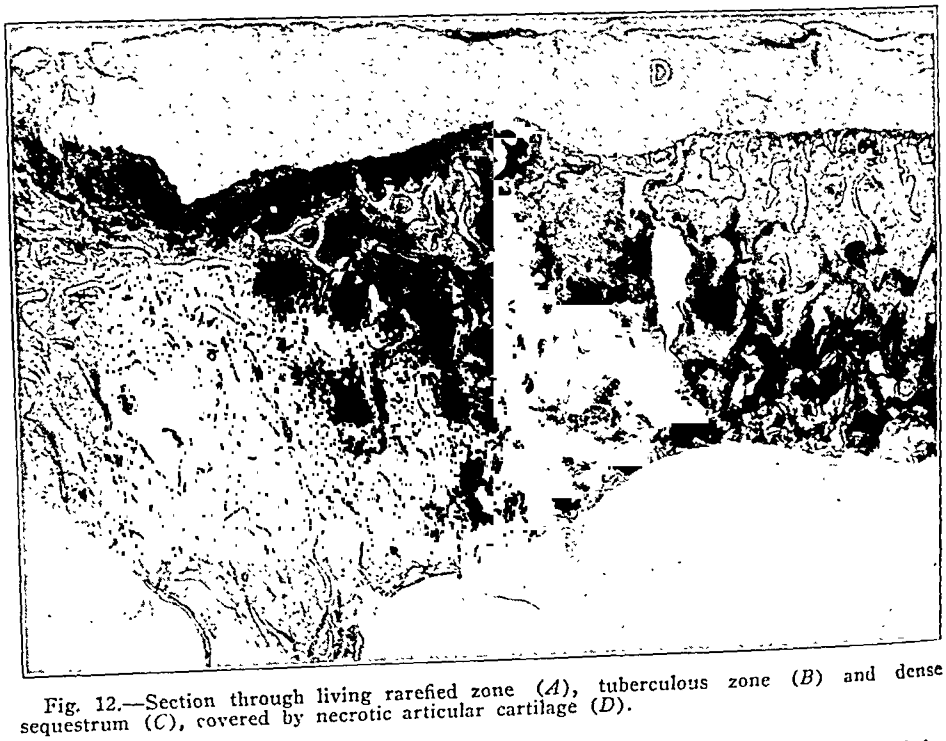

Fig. 12.—Section through living rarefied zone (*A*), tuberculous zone (*B*) and dense sequestrum (*C*), covered by necrotic articular cartilage (*D*).

ing zone of tuberculous granulation tissue should disappear, substitution of the sequestrum by the ingrowth of the surrounding bony tissue would be certain to occur, because the presence of calcium salts either in the shape of a calcified area or as dead bone favors the occurrence of ossification. Calcified areas in the soft parts as the lungs, kidneys, heart-valves, etc., usually undergo a certain amount of ossification by heteroplastic bone formation from the surrounding connective tissue. Whether such substitution of calcified tuberculous sequestra ever occurs has not been recorded, but it is rendered doubtful by the histologic examinations I have made. In all three cases a narrow but distinct zone of tuberculous granulations separated the sequestrum from the surrounding living bone, and as long as such tissue is present, substitution by new bone cannot occur.

From a pathologic point of view the surgical removal of such areas is as clearly indicated as the removal of sequestra in osteomyelitis, for destruction by the surrounding granulations is much more difficult after calcification has occurred than before. Whether clinical results justify their removal is a disputed question with the operating surgeons on one side and the conservative orthopedists on the other.

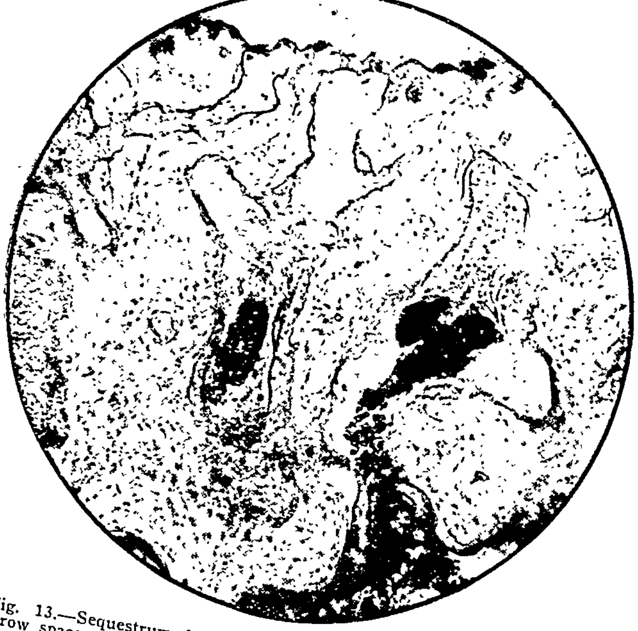

Fig. 13.—Sequestrum by high power, showing calcification in the marrow spaces.

SYPHILIS

In syphilis of the bones where the diaphysis is chiefly affected, caries plays an important part in the bone destruction, but the occurrence of irregular sized and shaped areas of necrosis is much more prevalent than in tuberculosis. They are due to the rapid development and irregular spreading of gummatous material with marked involvement of the blood-vessels and subsequent necrosis of the granulomatous tissue. New bone formation with sclerosis of the surrounding region occurs. Subsequent extension of the infectious process may result in death of the sclerotic portion, so that sequestra may be markedly eburnated.

The fate of the necrotic bone is variable. Much of it becomes separated as sequestra which are absorbed, leaving irregular areas filled with gummatous or necrotic material. When abscess formation and perforation occur, sequestra may be expelled, which is particularly the case with syphilis involving the bones of the vault of the skull. Substitution of the less severely involved necrotic portions may occur by the ingrowth of blood-vessels and osteoblasts from the surrounding living portions with the absorption of the old bone and deposition of new. Figure 15 shows this process occurring about the edge of a large syphilitic necrotic portion of the frontal bone in a man who died of gummatous meningitis.

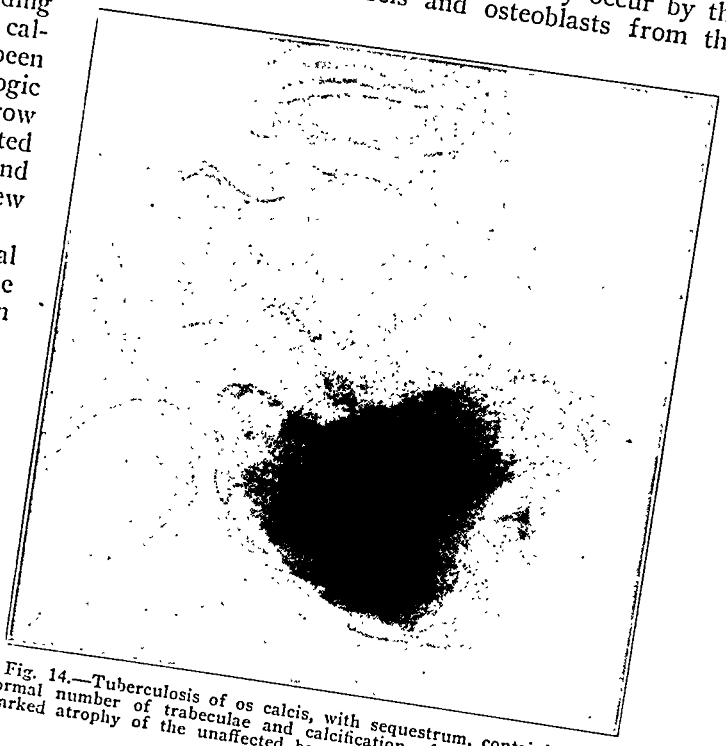

Fig. 14.—Tuberculosis of os calcis, with sequestrum, containing about normal number of trabeculae and calcification of the marrow spaces. Marked atrophy of the unaffected bones.

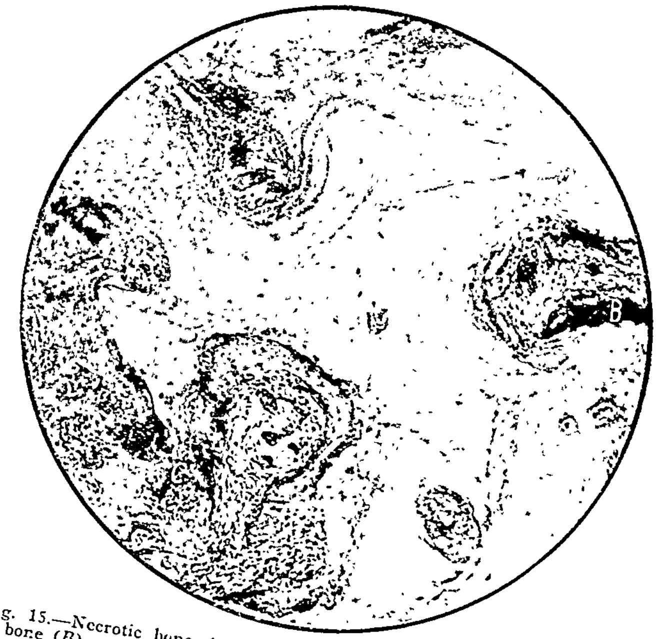

Fig. 15.—Necrotic bone (*A*) in syphilis, undergoing substitution by new bone (*B*).

In conclusion, necrotic bone may undergo a variety of changes—rapid absorption, sequestrum formation, creeping substitution by new bone, or calcification —according to the nature and severity of the cause. Hence, as Axhausen has previously pointed out, the terms necrotic bone and sequestrum should not be used synonymously.

122 South Michigan Avenue.

ABSTRACT OF DISCUSSION

Dr. **Fred H. Albee**, New York: Did the case of the sequestra in the knee shown by Dr. Phemister prove to be one of purely tuberculous infection, without any sepsis?

Dr. **Charles A. Parker**, Chicago: Dr. Phemister brought out a practical point with regard to the possibility of a necrosed bone's being taken care of by the system of the patient. I have seen a case in a child with necrosis of the left tibia and the right femur. Both showed the same appearance, with calcium deposits around, although no involucra. The tibia was removed because the leg still had the fibula for support. The femur was not removed. The patient did very well; and a roentgenogram showed a condition approaching normal a year later. The case was discussed at a medical meeting in Chicago at which many roentgenograms were shown. I asked the surgeons what was done to the femur, because they had strongly advocated removing the bone right away. They told me that the femur did not seem to do so badly as the tibia. The fact is that, in children, these cases may repair themselves, if given the opportunity.

Dr. **Henry W. Frauenthal**, New York: Was the Wassermann test made in Dr. Phemister's last case or in the other two cases?

Dr. **D. B. Phemister**, Chicago: Answering Dr. Albee, there was no secondary infection in any of these cases with tuberculous infection and the formation of sequestra. If the sequestrum is surrounded by an active tuberculous process, it may break down and be removed. The tuberculous process about it may become quiescent and the sequestrum remain; and when that occurs, if calcification takes place in the sequestrum, I do not see why it could not remain forever, and not require removal. In my third case, however, in which calcification of the sequestrum occurred, there was a zone of tuberculous granulation tissue about the shadow. The process had not become quiescent. It acts as a foreign body, and when once calcified it is destroyed with more difficulty by the tuberculous granulation tissue than before. Therefore, its removal seems indicated. I cannot say whether the Wassermann test was made in all these cases or not. I am sure it was in the last; but about the other two, I am not positive.

Bullets and Bacilli.—In the wars of the world they have been as Saul and David—the one slaying thousands, the other tens of thousands. I can never see a group of recruits marching to the depot without mentally asking what percentage of these fine fellows will die legitimate and honorable deaths from wounds, what percentage will perish miserably from neglect of ordinary sanitary precautions?—Sir William Osler, *British Medical Journal.*

COXA VARA ADOLESCENTIUM TRAUMATICA *

ARTHUR STEINDLER, M.D.

DES MOINES, IOWA

My remarks are to be confined to those cases of coxa vara of the adolescents in which a causative or contributary relation exists between trauma and deformity.

In a general way it is now conceded that separation of the upper epiphysis of the femur is likely to occur from trauma, either as partial or as complete separation or decollement of the epiphysis. For practical purposes, however, much of the information drawn from literature is too casuistic and dogmatic. On the other hand, considerable work has been done to establish definite facts in regard to practical questions of etiology and diagnosis. For instance, what is not only possible but likely to result from certain trauma to the hip in certain ages? What amount of violence is necessary to produce gross changes in the adolescent hip? What is the influence of chronic or repeated traumatism? And what is known of the relation hereto of static forces and rachitic predisposition?

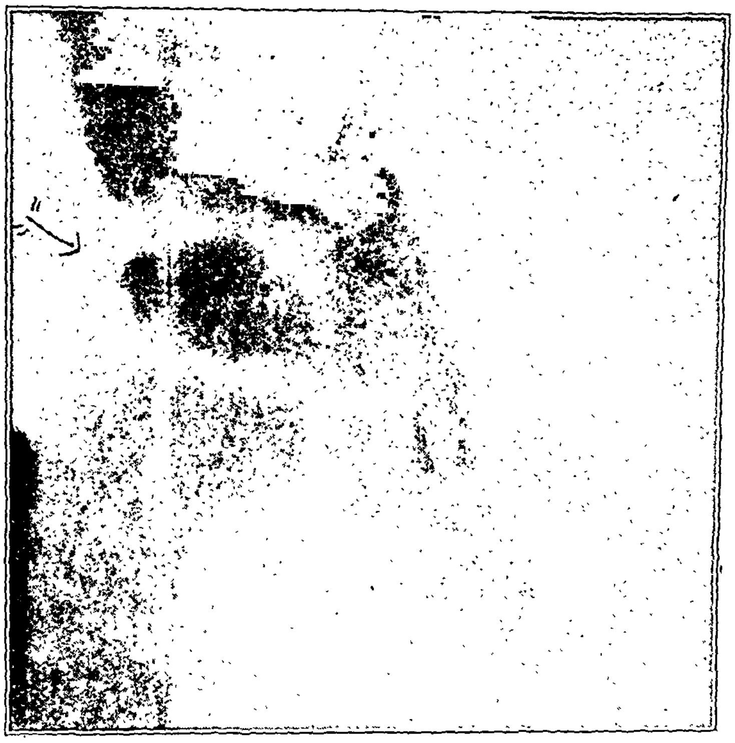

Fig. 1.—Traumatic separation of the epiphysis with partial atrophy of the head (Case 1).

Early investigations into the problem of adolescent coxa vara, beginning with the observations of Mueller, Hofmeister and many others are greatly governed by two points, late rickets and static forces. Concerning the latter, Helbing,[1] in a very exhaustive monograph on the subject, emphasizes the difficulty of distinguishing between the static and the traumatic coxa vara adolescentium, except for minute data in the history; but as I shall show later, especially the data bearing on the traumatic nature of the disease often fail to come forth in the history of the patient.

It is probably equally difficult to establish the relationship between trauma and late rickets. Among the endeavors which have been made to arrange the material from this point of view I may mention Peltesohn's[2] classifications:

1. Cases of traumatic coxa vara without rickets, which he thinks are rare. Nevertheless the literature abounds in instances of epiphyseal separation and following deformity in which no traces of rachitis could be found.
2. Cases of rachitis of the upper end of the femur with trauma as contributing cause of coxa vara. To

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Helbing, C.: Die Coxa vara, Ztschr. f. orthop. Chir., 1905, xv, No. 31.

[2] Peltesohn, S.: Zur Aetiologie und Prognose der Coxa vara infantum, Ztschr. f. orthop. Chir., 1911, xxviii, 3, 4.

this group undoubtedly belongs a majority of cases of traumatic separation of the epiphysis.

3. Purely rachitic cases of coxa vara adolescentium without trauma, but as the writer himself hesitatingly remarks, it may be that in these cases, too, slight traumatism contributes to establish the deformity. It seems that more satisfaction is to be derived from the simple anatomic distinction of Froelich[3] and other French writers: coxa vara trochanterica, coxa vara cervicalis and coxa vara capitalis. They consider the depression and inflexion confined to the neck as rachitic, while the depression of the head alone on the neck in this age, the coxa vara capitalis, is traumatic, meaning epiphyseal separation or infraction. As Froelich terms it, coxa vara essentielle, from overweight or insufficiency of the epiphyseal cartilage. Kirmisson,[4] too, points out that the *decollements epiphysaires* in adolescents are clinically and radiologically established beyond doubt as following insignificant injuries and leading to coxa vara deformity. These observations are now rapidly being acknowledged and confirmed from many directions. They are by no means rare. In 1903 Hoffa[5] reported 53 of his own cases, besides the 10 of Royal Whitman,[6] all in all 88 cases in the literature of separation of the epiphysis. Lately Wolff[7] reported 34 cases and Gerstle 53 cases of the same nature.

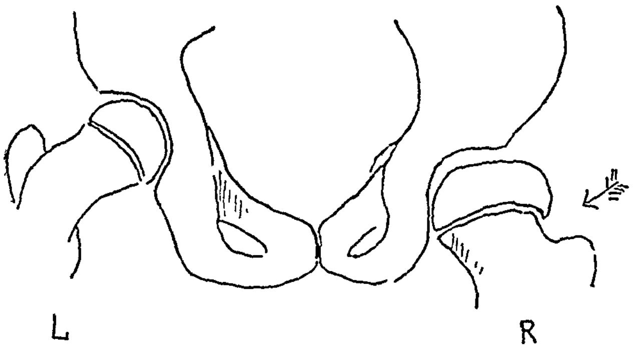

Fig. 2.—Epiphyseolysis following acute epiphysitis (Case 2).

Relative to predisposing rickets, the enlargement of the epiphyseal line and its softening as studied by Mueller, Kocher, Hofmeister, Frangenheim and a host of others indeed furnishes a favorable condition for slight and apparently insignificant injuries to loosen or to displace the head of the femur in the epiphyseal line. From Roentgen studies of such cases Siebs[8] arrives at the same conclusion, that most cases of coxa vara traumatica of the adolescents are primary separations of the epiphysis, at least as far as the coxa vara capitalis is concerned; that furthermore, if rachitic softening preexists it is manifest by the curving of the neck (coxa vara cervicalis) and it may represent a predisposing factor for following epiphyseal separation on slight trauma. While this combination is the rule, cases of purely rachitic deformity and cases of pure traumatic nature do exist, according to this observer.

On the other hand, the ambiguity of the relations of coxa vara adolescentium traumatica to statica is best illustrated by those cases in the literature classified as traumatica and following fall on the hip or other minor injuries (Rammstedt[9]). Sprengel[10] remarks that this epiphyseal displacement varies very widely in degree. The more incomplete forms approach more and more the so-called static form.

A gross displacement of the fragments necessitates a more extensive laceration of the periosteal covering. Cases occurring from major injuries show correspondingly more of periosteal tear. But the majority of cases occur from lesser injuries, as fall on the hip, etc., and in these cases the epiphysis may give as the point of lesser resistance while the periosteum still is complete. Microscopic examinations of the epiphysis after separation were carried out by Sprengel. Though unable to find any other bone pathology in his cases he noticed that the interfragmental substance consisted of true callus tissue. In the callus itself he found besides minute hemorrhages numerous very small particles of detached necrotic bone tissue and cartilage proving the traumatic nature, although no mention was made of a trauma in either of his two cases.

The Roentgen-ray evidence of the simple displacement offers no difficulty. But secondary changes may be noticed also consisting in atrophy of the femoral head and corresponding points of the acetabulum. R. Levy's[11] investigations show that osteo-arthritic changes may follow disturbances of the epiphyseal lines and that a coxa vara capitalis osteo-arthritica may be seen as a sequela of traumatic separation of the epiphysis.

Experimentally separation of the epiphysis has been obtained by Wullstein and Rammstedt. They were able to produce it by direct violence to the trochanter with the pelvis fixed and the thigh in extension and slight abduction. They conclude from their experi-

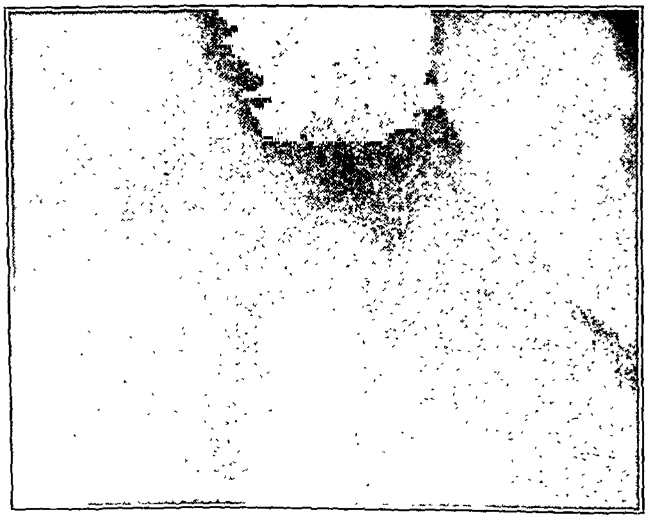

Fig. 3.—Coxa vara traumatica from separation of the epiphysis (Case 9).

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[3] Froelich, A.: De la coxa vara, XXVme Cong. franç. de chir., Paris chirurg., 1912, iv, 834.

[4] Kirmisson, E.: La coxa vara, XXVme Cong. franç. de chir. Paris chirurg., 1912, iv, 836.

[5] Hoffa, A.: Ueber Schenkelhalsfrakturen im kindlichen und jugendlichen Alter, Ztschr. f. orthop. Chir., 1903, xi, No. 49.

[6] Whitman, R.: Fractures of the Neck of the Femur, Ann. Surg., 1897.

[7] Wolff, O.: Ueber traumatische Epiphysenlösungen, Deutsch. Ztschr. f. Chir., 1900, liv, No. 45, p. 273.

[8] Siebs, E.: Beitrage zur Lehre der Schenkelhalsbrüche jugendlicher und kindlicher Personen und ihre Beziehungen zur Coxa vara, Fortschr. a. d. Geb. d. Roentgenstrahl., 1904, viii, 237.

[9] Rammstedt, C.: Traumatische Lösungen der Femurkopf-epiphyse und ihre Folgen, Arch. f. klin. Chir., 1900, lxi, 559.

[10] Sprengel, C.: Ueber die traumatische Lösung der Kopfepiphyse und ihr Verhalten zur Coxa vara, Arch. f. klin. Chir., 1898, lvii, 805.

[11] Levy, Richard: Beitr. zur. Frage der Coxitis, Coxa Vara und Osteoarthritis juvenilis, Deutsch. Ztschr. f. Chir., 1911, xcv, 205.

ments that the femoral epiphysis, while quite firm and resistant, will under certain conditions yield to either total separation or partial loosening according to whether and to what extent the periosteal covering is being torn. The periosteum may hold the head in place even after separation, and this point is considered explanatory of the fact that the young patient after the injury does not lose the function of the limb, but is able to bear weight on it. Only step by step the loosened epiphysis yields under the body weight as the tears in the periosteum allow of the slanting of the head downward and backward.

With all this evidence brought out statistically, pathologically, radiologically and finally experimentally in favor of the existence of the epiphyseal separation and its relation to coxa vara adolescentium, it may seem that I am wasting too much time discussing undisputed facts. But the point is not so much to prove the condition as such, but rather its relative frequency. In other words, in a certain age, from say 9 to 16, if a certain traumatic factor, major or lesser, is given, epiphyseal separation is not only possible but highly probable to occur, with or without preexisting or coexisting rickets, and to be followed by a deformity known as coxa vara adolescentium. In fact, such was the case in eighty-four out of Hoffa's eighty-eight cases collected.

The second point is that the producing trauma may be and very often is so slight as to fail to impress the observer with its significant connection. Nevertheless, as already stated, minor injuries and especially repeated ones are perfectly capable of producing the separation. Static influence, too, is a continuous strain. The late establishment of the deformity after strain or injury have ceased to assert themselves offers a striking analogy to the posttraumatic kyphosis of Kuemmel, especially since so-called molecular necrosis of detached bone and cartilage have been found microscopically in cases of traumatic coxa vara adolescentium.

In the third place, the loss of function in these cases is never absolute or immediate, except in cases of great violence or injury. In fact, in most cases there is a period of functional integrity, the impairment following later and slowly according to the progress of the deformity.

Among approximately 1,000 orthopedic cases I have found traumatic separation of the epiphysis either clinically or radiologically or both, in ten cases, equaling 1 per cent. Short abstracts of the histories follow:

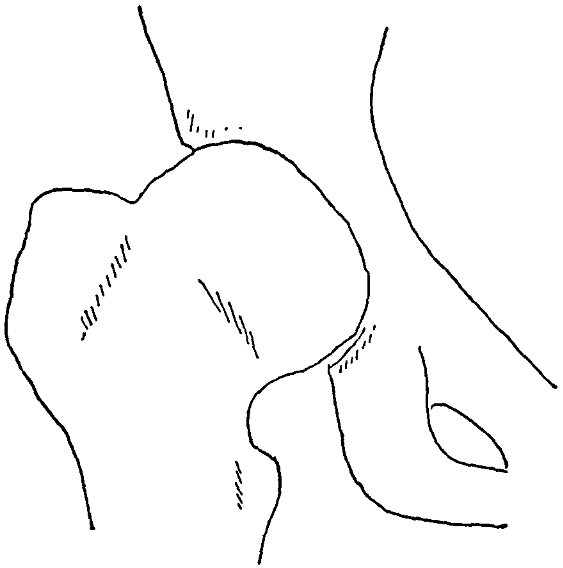

Fig. 4.—Coxa vara deformity, probably following epiphyseal separation (Case 10).

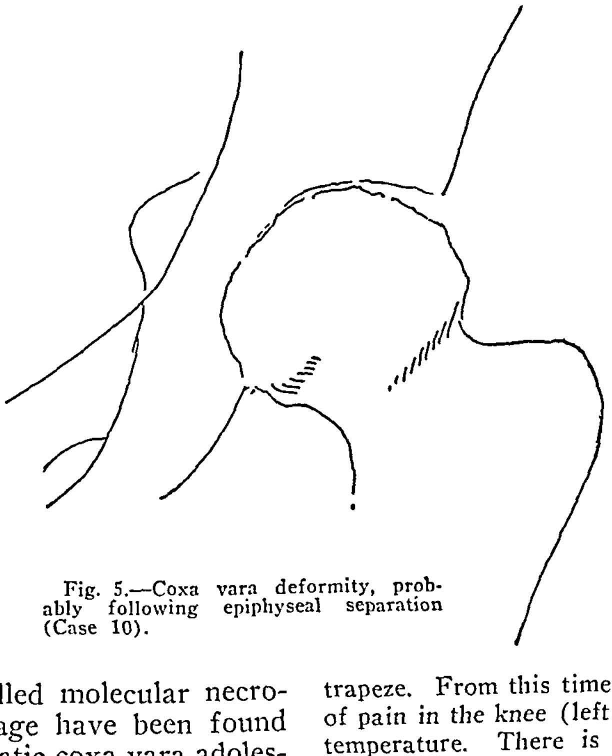

Fig. 5.—Coxa vara deformity, probably following epiphyseal separation (Case 10).

Case 1.—J. J., aged 12. March, 1913. No trauma given. Complains of pain in right hip and limp for four weeks. Increasing disability. No night cries, no temperature. There is restriction of abduction and inward rotation. The Roentgen ray shows traumatic separation of the epiphysis with partial atrophy of the head (Fig. 1).

Case 2.—E. G., aged 11. April, 1914. A few months ago sore throat followed by pain in right hip. Confined to bed for three weeks, when symptoms subsided. After getting up a limp gradually developed. No night cries. Hip partially fixed in adduction and outward rotation. Abduction nil, inward rotation very limited, flexion free, extension limited. Roentgen ray shows slight displacement of right epiphysis. Diagnosis, epiphyseolysis following acute epiphysitis (Fig. 2).

Case 3.—C. F., aged 13. March, 1914. Slight trauma two months ago (fall on right hip). Suffered no loss of function. Pain and limp developed gradually in the last few weeks. Increasing shortening. No night cries, no temperature. Right hip in adduction. Abduction nil, adduction free, out and inward rotation free. Roentgen ray shows slight epiphyseal detachment. Diagnosis, traumatic separation of the epiphysis. Spica and crutches.

Case 4.—L. P., aged 19. March, 1914. Limped with right limb for a number of years, does not know how long. Deformity increasing. No trauma given. Hip in adduction. Abduction slightly restricted, inward rotation considerably so. Outward rotation normal, extension and flexion slightly restricted. Roentgen ray shows coxa vara deformity with overlapping head of the femur. Diagnosis, coxa vara capitalis, statica (?). Operative correction advised.

Case 5.—P. K., aged 9. April, 1914. History very incomplete. Has been limping for a year or so. No pain, no night cries. No trauma. Hip in adduction and eversion. Abduction restricted, all other directions appear to be free. No temperature. Roentgen ray shows slight epiphyseal displacement with partial absorption of the head. Diagnosis, separation of epiphysis, secondary atrophy (epiphysitis?).

Case 6.—L. E., aged 9. November, 1913. Has been limping since last July after a fall out of a trapeze. From this time he also has complained occasionally of pain in the knee (left). No pain in hip, no night cries, no temperature. There is slight restriction of abduction and flexion abduction. More restriction of extension. Slight atrophy. Roentgen ray shows some epiphyseal displacement and signs of absorption. Diagnosis, coxa vara traumatica with posterior separation of epiphysis.

Case 7.—V. M., aged 11. December, 1913. Was hurt two months ago while playing by being pulled violently by his right limb and stepped on on the right hip by one of his playmates. He was lame for three days but after that he managed to go to school. He again complained of pain in right knee and thigh soon afterward. There was also pain in the small of his back. At that time he was very restless but is better now. No night cries. Gradual impairment of function. At time of examination does not bear weight on his limb at all but walks on crutches with the limb drawn up. There is tenderness over the right sacro-iliac region and in front of the thigh and very distinctly in the gluteal region and over the greater trochanter. There is no distinct restriction of motion. The Roentgen ray shows a separation of the head ¼ inch and about the same in the apophysis of the greater trochanter upward. Diagnosis, traumatic separation of epiphysis and trochanter major. Plaster spica and crutches.

Case 8.—M. M., aged 14. May, 1912. Had a fall December last, landing on his back and left hip. After a free interval of three weeks he developed a limp and some soreness of left hip, but no nightly pain. He was put to bed for two weeks and the limp disappeared. After he got up he started to limp again, which he has done to the day of examination, the disability becoming gradually worse. The left thigh is in adduction. Motion is limited in abduction and inward rotation. No actual shortening. Trendelenburg symptom positive. The diagnosis coxa vara traumatica from epiphyseolysis is confirmed by the Roentgen ray.

Case 9.—Mrs. S., aged 29. December, 1912. When 3 or 4 years old she had a fall, injuring the right hip. As far as she remembers there was a gradual drawing of the hip and an increasing limp, shortly after the accident, but no severe or nightly pain. Was always able to bear weight on the hip, but complains more for the last six months. The hip is incompletely fixed in adduction flexion position, abduction and inward rotation being completely abolished, while the other directions are comparatively free. The real shortening is only ¼ inch. The diagnosis is coxa vara traumatica from separation of the epiphysis. No roentgenogram could be taken (Fig. 3).

Case 10.—V. P., aged, 16. April, 1913. October last he slipped and fell on his left hip, but was not disabled for two weeks. Then he began to get worse, complaining of pain and limping and was put to bed for three weeks. Though he regained the function of his leg, the limp has been steadily increasing, also increasing shortening. There is considerable adduction contraction with outward rotation, and limitation of abduction and inward rotation. The other directions comparatively free. The Roentgen ray shows coxa vara deformity, probably following epiphyseal separation (Figs. 4 and 5).

REVIEWING THE POINTS SIGNIFICANT FOR THE DIAGNOSIS

Injury to the hip of moderate extent, fall or wrench.
An intermediate period of functional freedom.
No or very mild subjective symptoms.
The late and gradual development of the coxa vara deformity with increasing disability.
The age of the patient.

I do not think that absolute reliance can be placed on the Roentgen-ray evidence, inasmuch as very slight lesion will not show any more than they do in injuries to the spine which are later followed by Kuemmel's posttraumatic kyphosis. Still it is an invaluable aid.

203 Flynn Building.

Memory and Education.—Memory is a fundamental phenomenon of organic life. In its widest sense it signifies the fact that impressions once received by an organism are retained for a greater or less period and that this retention is indicated in the modified behavior of the organism. The evidence of memory in animals is their ability to profit by experience. A white rat is placed at the entrance of a maze at the center of which is food. The animal moves about in an aimless manner until at length it reaches the center. If on succeeding trials the rat shows an improvement in the accuracy and rapidity with which it moves about the maze, this means that its earlier attempts have in some sense left their effects; they have modified in subsequent conduct. Memory, when used in this widest sense of the term, lies at the basis of all learning. It is a measure of educability.—Solvin.

COXA VARA*

JOHN RIDLON, M.D.

CHICAGO

Perhaps the most valuable paper that has ever been written on coxa vara is that of Elmslie,[1] which appeared in 1913.

For the sake of giving Elmslie's views a wider circulation it has seemed to me better to make this paper a review rather than attempt a personal paper on the same subject. Elmslie says:

> Coxa vara is an anatomical term indicating the condition of depression of the neck of the femur, so that the angle that the neck of the femur makes with the shaft, normally about 125 degrees, is lessened. Such depression of the neck of the femur may occur by bending at the root of the neck, in the middle of the neck, or close up to the head of the bone, or there may be a general curvature of the whole neck.
>
> The clinical manifestations of coxa vara are, briefly, diminution in the degree of abduction permitted at the hip-joint with real shortening, manifested by elevation of the trochanter. Several other conditions occur in which these clinical manifestations are found, but in which the radiographs show a deformity of the head of the femur rather than a depression of the neck. These are best excluded from coxa vara; they are: (1) results of old inflammatory disease, either acute, such as epiphysitis or chronic, as tuberculous disease; (2) osteo-arthritis, and (3) pseudo-coxalgie (Clave).
>
> Even though we limit the name coxa vara to an actual depression of the femoral neck, we are still left with an anatomical condition which may vary in different cases, and which may result from different pathological processes. The pathology of some of the forms of anatomical coxa vara is clear and needs but very brief allusion. These conditions can be included under two headings: (1) injury; that is, fracture of the neck of the femur, with union in a deformed position; (2) processes in which the bone is known to be definitely softened and to give way under pressure; i. e., rickets, osteomalacia, osteitis deformans, osteitis fibrosa.
>
> To these groups I shall not allude further except that the pathology of the idiopathic varieties of coxa vara is intimately connected with the question of the occurrence of fracture of the femoral neck in children, and that it is necessary to include a brief description of the anatomy of rickety coxa vara. We are left with idiopathic cases of coxa vara, which may be classed according to their history and anatomy into three groups: (1) congenital; (2) infantile or cervical (*a*) with a fibrous intersection in the neck, (*b*) with a strong neck without any fibrous intersection; (3) adolescent, and possibly a few aberrant cases which do not fall properly into any of these groups.

I have not been accustomed to consider any cases as true coxa vara when the pathology was as stated above, but have limited the use of the term to a giving way of the epiphyseal line between the head and neck to a greater or less extent—an extent sufficient to give sooner or later the characteristic symptoms of coxa vara. That diagnostic symptoms of coxa vara may be present before roentgenoscopy will show a slipping at the epiphyseal line and before any certain shortening can be measured has been demonstrated by Case 1, to be recorded later on.

It is true that most cases of coxa vara appear at about the period of adolescence, but since all cases do not appear at this time and since it has not been shown that the adolescent period is an etiologic factor in these cases, I think it best to dissent from Elmslie's use of the term. The same may be said of injury as an etiologic factor; by no means do we find a history of injury in all cases. I have observed two bilateral cases. In neither were the hips attacked at or near the same time, and in neither of the four hips was there any conscious injury at or about the time that shortening occurred. It is equally true, as Elmslie has noted, that coxa vara is found much more frequently in boys than in girls. We do not say boys' coxa vara, since girls also suffer; and we ought not to call it adolescent coxa vara, since it occasionally occurs at other periods, or traumatic coxa vara, for frequently there has been no known injury. Let us then call it coxa vara, which without qualifying adjective indicates the pathology, and let us clearly separate coxa vara from fracture of the neck of the femur in children and adolescents.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Elmslie, R. C.: Coxa Vara, Its Pathology and Treatment, London; Henry Frowde, Oxford University Press, and Hodder and Stoughton, 1913, price 2 shillings net.

Under symptoms and physical signs, Elmslie says:

> A few points in the clinical symptoms of adolescent coxa vara assist us to form views as to the pathology—in the first place whether there is an accident or not there is nearly *always in the progressive stage of the deformity a period* during which the movements of the hip-joint are almost or quite abolished. Hofmeister in his first contribution to the subject laid stress upon this stage, but it seems to have been forgotten by many surgeons, who, on account of the fixation of the joint, make the diagnosis of tuberculous disease of the hip. The rigidity is due entirely to muscular spasm; it disappears when the joint is examined during anesthesia, and its presence is easily understood when it is remembered that the lesion in adolescent coxa vara is close to the epiphyseal line and *that this line is entirely intra-articular.* During this stage there is also *pain in the hip, extending down to the knee, rapid wasting of the muscles of the thigh and buttock,* and a fulness in Scarpa's triangle. These symptoms also are like those of tuberculous disease; they indicate only an intra-articular lesion of the hip-joint.
>
> This period may last a few weeks or several years; sooner or later the movement returns, and the deformity only remains. The limb is now shortened, adducted at the hip-joint, and everted; occasionally also it is a little flexed. The real shortening, measured from the anterior superior iliac spine to the internal malleolus, is seldom more than an inch; *the total apparent shortening,* measured from the umbilicus to the internal malleolus, is *often as much as* 2½ or 3 inches; this and the eversion are usually evident at a glance. The great trochanter is raised to a degree corresponding with the real shortening and is very prominent. *Movements* at the hip-joint are usually in the later stages free, except abduction and internal rotation, which are limited by anatomical factors.

I have always regarded the position of adduction and outward rotation, with abduction and inward rotation limited, as the first typical symptoms of coxa vara. Flexion also will be found restricted, but it will be found that the thigh can be flexed further if somewhat abducted during the movement than if carried upward along the anteroposterior plane. These symptoms and the fulness in the groin may be explained by the course of Case 1, in which unquestionably the epiphyseal line opened up anteriorly some months before the cervical side slipped upward on the caput and a true coxa vara showed in the roentgenograms.

To quote again:

> In acute traumatic coxa vara a definite downward displacement of the epiphysis of the femoral head is seen, the upper part of the fractured end of the neck appearing above as a prominence. In cases following at an interval after an accident, after several slight accidents, or without any accident, the appearances are almost identical and are as follows: The head of the femur is displaced downward, so that the lower part of its joint surface no longer lies in the acetabulum. In spite of the fact that most radiographs are taken with the limb everted, the head does *not* appear unnaturally large; this indicates that it is displaced posteriorly. The epiphyseal line is, as a rule, clearly seen. It appears unnaturally long in some radiographs; this is probably due to the *fact that the head is not seen from its true anterior aspect. Thus, considering the epiphysis as a cup-shaped disk with the concave side toward the neck,* the view includes part of this concave surface. The femoral neck in most cases shows two parts; the part next to the shaft has its natural direction, at any rate as regards its lower border; the upper part, though springing naturally from the trochanteric region, being rounded off above. The part of the neck near the head, however, slopes downward and inward to join it; the lower border here takes as a rule a sharp downward curve like a hook, and below the head overhangs it "like a mushroom." The upper border of this part forms a continuous upward convexity, internally continuous with the surface which faces the epiphyseal line; it shows, however, in many radiographs a prominence varying in size and situated nearly opposite the upper margin of the acetabulum. This, doubtless, is the spot to which the outer extremity of the epiphysis was attached.

After considering the various other forms of so-called coxa vara, Elmslie's conclusions are:

> Coxa vara is a deformity, then, of the upper epiphyseal region of the femur and varies in its anatomy as it comes on: (1) before birth, when a strong neck pointing in an abnormal direction results; (2) during the first five or six years of life, while the neck of the femur is largely cartilaginous, when the depression is at the root of the neck of the femur, with usually a fibrous intersection across the neck; (3) during adolescence when there is a slipping downward and backward of the epiphysis. This deformity is undoubtedly due often to accident; there is a difference of opinion among authors as to whether the more usual accident in childhood is a displacement of the epiphysis or a fracture of the neck; the truth, I believe, is that during the earlier years of life, before there is a well-shaped neck, the accident is a fracture of the neck; later, when there is a well-formed neck and a *transverse epiphyseal line separating it from the head,* the injury *is a separation of the epiphysis.* We find, therefore, *that the coxa vara of young children is cervical in type,* the coxa vara of adolescence is epiphyseal. Accident will *not* account for all cases, but we know that the *non-traumatic* cases have the same pathological anatomy as the traumatic cases occurring at the same age period; we must presume, therefore, that in them there is the same displacement, but that there is no definite injury to produce this, that some local pathological condition of the bone exists which enables such displacement to occur with great ease.
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> On analogy with such conditions as adolescent genu valgum, on the microscope findings in cases of resected specimens and on the undoubted occurrence of infantile coxa vara in rickety children, we may presume that this pathological condition consists in a defective ossification of the bone formed at the upper epiphyseal line of the femur. As has already been briefly indicated, the occurrence of coxa vara *deformity* alters the direction of the pressure of the weight *of the body* on the neck of the femur. In those cases, such as the congenital, in which there is a strong neck and no displacement of the epiphysis, this altered pressure will not tend to greatly increase the deformity. In the ordinary *type* of infantile case, however, this alteration brings the pressure of the upper margin of the acetabulum directly across that weak part of the neck which contains the fibrous intersection, and in the ordinary adolescent form similarly the pressure of this margin of the acetabulum is brought directly across the region near the epiphyseal line, at which the displacement

of the head of the femur has taken place. As a result, in these two forms of coxa vara, when once a moderate degree of deformity has arisen, there is a mechanical factor in the shape of the weight of the body acting through the acetabulum which will tend to increase the deformity, quite apart from the existence of any pathological process. This mechanical point is of great importance in treatment.

Nowhere in Elmslie's paper do I find that he has noticed that which has been noted by many others, namely, the great frequency with which we find these boys having coxa vara to be fat, and if male of the feminine type, and with underdeveloped sexual organs. All children of this type should be constantly under medical supervision and such preventive diet and drug treatment as seems indicated.

For prevention of the increase of deformity Elmslie recommends the use of the Thomas caliper splint, made long enough to prevent the weight from being transmitted through the hip to the ground. This of course is a most reasonable theory, but as a clinical fact it does not prevent the increase of deformity, nor, as in Case 1, does it prevent shortening when no shortening has yet occurred.

Elmslie mentions forcible abduction during narcosis, but appears to have had but a single experience with a doubtful result. He also mentions the various operations of osteotomy without any evident devotion to any one of them.

I have treated all cases of coxa vara for the past four years by strong traction with the limb abducted, the patient not being anesthetized, and while the limb was held in this position have applied a plaster splint from the ankle to the nipples. I have allowed the patients to lie still or walk about as they might choose; and have continued this treatment until the patient had walked without pain or sensitiveness for at least three or four months.

CASE 1.—This boy, R. R., was just 12 years old, short and weighed 110 pounds. His sexual organs were extremely undeveloped. He began to limp three months before examination after riding a donkey up Mount Vesuvius and climbing the dome of Saint Peter's at Rome. The left leg lay rotated outward. Except to inward rotation all movements at the hip were resisted when carried to their extremes. In flexing the thigh it circled outward. There was no shortening, and the Roentgen-ray pictures were negative. After three more months without material change a long traction hip splint was applied to be used as a perineal crutch. Despite this, at the end of six months there was ¾ inch shortening and the roentgenogram showed a typical coxa vara. The patient was anesthetized, and the leg stretched forcibly and put up in plaster in abduction. For some time the patient remained in bed, then used crutches, and finally walked in the plaster splint without crutches until all evidences of sensitiveness had passed. Somewhat more than a year later there was some sensitiveness in the right hip and some restriction to motion, but no shortening; after six months or more shortening developed, and the roentgenogram showed coxa vara in that hip. Now the hips are practically alike. When he sits with the knees a foot apart the feet cross because of the outward rotation of the thighs.

This case shows conclusively that the epiphyseal line may open up in front, giving outward rotation of the thigh, some months before the neck becomes detached from the head and slips upward into the characteristic relation. And it demonstrates that we are warranted in making the diagnosis of coxa vara when the clinical symptoms of coxa vara are present sometime before the displacement can be demonstrated by roentgenoscopy.

CASE 2.—This case, although apparently typical of coxa vara, is exceptional in my experience. The boy, E. B., fell a distance of 10 feet to the ground nine and one-half months before the picture was made. There was ¾ inch real and 1¼ inches apparent shortening; ¾ inch atrophy of the thigh and ½ inch of the calf; 35 degrees flexion deformity; a small fluctuating tumor on the anterior and outer aspect of the thigh, and only slight motion in flexion and rotation.

CASE 3.—This case, apparently typical coxa vara, is somewhat unusual. The boy, A. P., was 7 years old. He had limped for a year; cause unknown, but had jumped a good deal. There was ⅝ inch shortening, and possibly ⅛ inch atrophy of thigh and calf. Rotation was restricted, but there was nearly full flexion and hyperextension.

CASE 4.—This man, F. M., when a youth worked hard on a farm. He gradually became lame when about 14 years old, and the leg became short. He was taken to a prominent Chicago surgeon, now dead, who said it was not hip disease, and advised stopping work and better feeding. Later he consulted another prominent surgeon of Chicago, also deceased, who asserted that it was tuberculous hip disease and applied an extension splint and crutches. Then pain came in the other hip, and again the diagnosis was tuberculosis, and he was treated in bed with weight and pulley to both legs for nineteen months. At a later period he had another year in bed. Finally in 1911 he was sent to bed again for a year with weight and pulley treatment by one of our noted Chicago surgeons, now living. In January, 1912, this man was brought to me the distance of about one hundred miles on a cot with weights attached to his limbs. There was 1 inch real and 2¾ inches apparent shortening; no atrophy of thigh or calf. There was no rotation and little flexion at the right hip. Roentgenoscopy revealed the left hip normal and the right hip having an ancient coxa vara.

CASE 5.—This boy, C. B., aged 15, began to limp without known cause eight months before I saw him. The limb was adducted and rotated outward. No real shortening but 1½ inches false shortening. There was slight restriction to flexion, and sensitiveness to hyperextension and inward rotation. He was treated with a long traction hip splint for about three years.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. STEINDLER AND RIDLON

DR. WALLACE BLANCHARD, Chicago: Two or three years ago, I reported two cases of coxa vara before the American Orthopedic Association. In one the condition was clearly inflammatory. It occurred in a boy of 18 or 20 years, who had been very sick with diphtheria and had made a slow recovery. The diphtheritic infection occurred when he was about 12 years old. He was in bed for about a year but gradually recovered. During the succeeding two or three years, nothing unusual was noticed. Then coxa vara slowly developed. The deflection downward was about 120 degrees, with a mushrooming of the heads. I presented, in connection with this case, one of idiopathic coxa vara, in a boy about 14 years of age. He had no history of injury, and had not had any symptoms of rickets; but at about the age of 13 he was noticed to walk somewhat differently, with an incurved back, presenting something of the appearance of a double congenital hip dislocation. This gradually increased. When I saw him the head and neck of each femur were deflected downward about 120 degrees. The deformity was symmetrical in both hips. I asked Dr. Ridlon where he would place it, according to Elmslie's classification; and he said that he did not know.

DR. W. C. CAMPBELL, Memphis, Tenn.: I have had four cases of apparent coxa vara in private work, which later developed into tuberculosis of the hip. All the patients were between the ages of 8 and 10 years, an age at which you would not expect to find a separation of the epiphyses in this region. Roentgenoscopies were made in all the cases; and in none, at first, did there appear to be any changes that we could discern. Later on, however, they showed tuberculous changes in the region of the epiphyses. The symptoms in the early stages when these cases were seen were limitation of internal rotation and abduction. There was very little pain and none of the usual symptoms of tuberculosis of the hip were present. I feel sure from these cases that tuberculosis of the hip may give, in the beginning, the identical symptoms of coxa vara. This did not occur to me until these cases came under my observation about two or three years ago at nearly the same time. The clinical symptoms later, the Roentgen-ray findings and the treatment throughout the whole course of the disease were those of tuberculosis of the hip. They were definite cases of tuberculous hip. I had had other cases of coxa vara, particularly in adolescents and young children; but I had never seen an acute coxa vara at that age, and this made me doubt such a diagnosis though all symptoms and physical *signs pointed to that condition.*

Dr. J. D. Griffith, Kansas City, Mo.: I have had only one case but from the study of that and the literature that I could find on the subject of coxa vara, including the work mentioned by Dr. Ridlon, I came to the conclusion that there was only one solution of coxa vara. It belonged to the domain of metabolism. Here was an area that was imposed on by the body weight; and if, during the course of development, there was not a sufficient deposit of salts in the line of epiphyseal union, as Dr. Ridlon has pointed out, the result could easily be a diminution in the distance between the *trochanter and the head of the femur and a change in its* angulation. In this condition, following an enteroptosis or anything else that might produce an improper metabolism. there might be absorption of the material thrown out; and I think that if we could get at the histology of the metabolic changes, we should find the cause of the trouble. My case was in a child who had no trouble until he commenced to bear his weight, at the age of 3 years. Then he began to have some trouble in his hip. I could not make out, by means of the Roentgen ray, or anything else, any tuberculous trouble; but here was a distinct coxa vara at the age of 8. I then made up my mind that this was due to a metabolic trouble. Only three weeks ago, the patient being still under treatment, he came to my office again and I found that the other hip was commencing to show the same process. I am satisfied that tuberculosis has nothing to do with the condition in this case.

Dr. Reginald H. Sayre, New York: I believe that a great many of these patients, undoubtedly, as Dr. Griffith says, *suffer from a disturbance of metabolism;* and that, as shown by the Roentgen ray, the appearance is not that of tuberculosis. One must get a good roentgenogram that shows bone definition, in order to examine these cases. One does not always get that; but in many of these cases one can see that a change is going on in the neck and in the epiphysis. Taking a series of roentgenograms, month by month, at times a thickening of the periosteum of the external layer can be seen where nature is trying to brace up a softened part of this neck; and unless these cases are treated by removing the weight-bearing, by ambulatory splints, the bearing of the weight on this soft bone will result either in telescoping of the bone and coxa vara of that kind, or in separation of the epiphyses from some trivial thing like stubbing the toe, as I have seen happen. I believe that they are not tuberculous cases, but are due to some other disturbance of nutrition. In some instances I have thought them syphilitic. In others they have appeared not to be so. In a number of cases the children are fat and have very slightly developed genitalia, and at times they have had more or less general malaise and ill health, following some disturbance such as measles.

Dr. Gwilym G. Davis, Philadelphia: An interesting case came under my observation recently. The patient was a boy 15 years old, who, over a year ago, was thrown from a sled and hurt his hip. He was under treatment for a short time and apparently recovered. Several months later he began to limp. After a time he would cease to limp, but later the limp would return. He was brought to me more than a year after his original injury and a roentgenogram showed a separation—or rather displacement—of the epiphysis. The case belonged to the coxa vara capitalis class referred to by Dr. Steindler. The epiphysis of the head was distinctly tilted downward, so that the hooked edge on the lower surface could be seen; but there was no change in the axis of the neck with relation to the axis of the shaft. Tuberculosis had been suspected, and the family history showed that taint in it. Now what is this boy suffering from? A dyscrasia like latent rickets, or solely as the result of an accident? If he is a healthy boy who has simply had an *epiphyseal separation, what explanation* can be given of the recurrent trouble? There is ¼ inch of shortening. I have seen cases of epiphyseal separation from fractures of the neck in children and they repair as quickly as any other fractures. This boy gets better, and then worse. Is it accounted for solely by the static condition? It may be; because he is extremely fat, heavy and big for his years. To such an extent is this so that it is suspected of being a case of infantilism. It may be that it is a case of lack of development, in which case one would put the boy, possibly, on pituitary extract. The whole question, to my mind, is an exceedingly obscure one and difficult of solution.

Dr. Emil S. Geist, Minneapolis: I believe that the subject of coxa vara will attract our attention a little more in future, since we have learned that some cases of coxa vara have been found in cases of congenital dislocation of the hip, in which reposition has been successful and the head centrally located. I have such a case to report, in which the operation of Lorenz was done on both sides eight years ago. The child is 14 years of age now, well developed and heavy. The heads of both femurs are in their sockets, but *there has supervened a marked degree of bilateral* coxa vara, giving the child a moderate "waddle." This will, perhaps, happen to any of us in some of these cases in which we have attained and maintained reposition.

Dr. John Ridlon, Chicago: In the last part of my paper, which was not read, I mentioned the condition referred to by Dr. Sayre and said that in the vast majority of the cases *the children are fat and have undeveloped genitalia.* It is the opinion of some internists that this condition of fatness and lack of sexual development is due to a want of normal balance between the thymus and the thyroid gland, and perhaps some of the other ductless glands are working irregularly. You may, however, find the feminine type of male in some cases without the excessive fat, and among these a good many of these cases of coxa vara that are not associated with fat. I formerly employed the long traction splint in the treatment of such cases, but I have now ceased entirely to use it; because in Case 1, in which there was a bilateral coxa vara, the deformity in the second hip developed a year or a year and a half after the first hip was well. In that case, I put on the ambulatory splint, a long traction splint, without traction being applied, to act as a peroneal traction. I put it on before there was any shortening or any evidence of coxa vara by the roentgenogram, and while wearing the splint he developed the shortening and a coxa vara that could be seen in the roentgenogram. The symptoms of lack of rotation and lack of abduction were present from the beginning. I am sure that the long traction splint will not prevent the development of coxa vara or help its cure, because I have seen patients recover without the long traction splint, without protection or any treatment at all, as quickly as when they have worn a protective splint. I am accustomed to stretch the leg with a machine, with abduction as far as is normal and to put the patients at once in the plaster spica and have them walk on the leg for some months until all evidence of sensitiveness has passed. I have had better results and a greater degree of lengthening in this way than with the traction splint. As to the relation of congenital dislocation of the hip to coxa vara, mentioned by Dr. Geist, I would say that I did not understand the case that he has in mind to be a case of coxa vara at all, any more than were those in the photographs shown by Dr. Steindler. Only one of those is coxa vara as I understand it. In replacing congenital dislocation, when the shortening is 1¼ to 2 inches and the muscles are very short, so that it takes two or three years to get the leg into normal rotation with a reasonable degree of motion, there is always an atrophy of the head of the bone from pressure due to the shortened muscles; just as in replacing a traumatic dislocation that has been out a long time. I replaced one that had been out three years, in a boy of 17; and two years afterward when he was going around on the leg, trying to get motion in it and to get it in the normal position, I found that there had been considerable pressure atrophy of the head of the femur. Therefore, change in and shortening of the head are, in my opinion, due to the pressure from shortened muscles, and not to congenital dislocation.

Dr. Arthur Steindler, Des Moines: The pictures that I exhibited were of cases of epiphyseal separation, so far as the roentgenogram gives information. I believe that not all epiphyseal separations show in the roentgenograms, and I should not rely on the picture entirely for the diagnosis; but two or three of my pictures do show an epiphyseal separation and a slipping of the epiphysis on the head, which has been described by German authors, producing a deviation in the axis of both the head and the neck of the femur. The patients were photographed a few weeks after the injury, as soon as the limp developed, and had not had time to develop coxa vara. I want to emphasize that the relationship of slight hip injuries to the possible development of coxa vara adolescentium has been established. All the cases that came under my care were traumatic, and a minor injury of that kind will bring about a separation of the epiphyses with the same degree of probability that a fall in the aged will produce fracture.

SEPARATE RENAL FUNCTION

OBSERVATIONS AS DETERMINED BY THE URETER CATHETER AND PHENOLSULPHONEPHTHALEIN *

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Enough has been written about phenolsulphonephthalein to establish the value of this drug in the determination of renal function. It has seemed to me, however, that certain observations based on its employment in determining the function of the kidneys separately might be worth recording. The cases on which these observations were made were taken from private practice and from the records of the genito-urinary department of the Massachusetts General Hospital. The tests were done by me or by some other member of the genito-urinary staff.

The technic employed by all was essentially the same. When possible, both ureters were catheterized; if only one could be entered, the urine from the other was collected by a catheter in the bladder. After the urinary flow was established, 1 c.c. of solution containing 6 mg. of phenolsulphonephthalein was injected subcutaneously, intramuscularly or intravenously. The flow from the catheters was caught in test-tubes containing several cubic centimeters of 25 per cent. sodium hydroxid. The urine in most cases was collected from each side for fifteen minutes after the pink color first appeared from that side. These specimens were made strongly alkaline, diluted to 1,000 c.c. with water, and the percentage of dyestuff estimated by means of a series of graduated tubes of phenolsulphonephthalein solution, or by the Dubosc colorimeter. In most of the cases before the catheters were removed, the presence or absence of color in the bladder was ascertained by urethral catheterization.

In the earlier days of this test, the drug was injected subcutaneously or intramuscularly. We have noticed no important difference between the results obtained with one or the other of these methods.

We have the records of seven cases studied in this way and reported in such form as to make comparison possible. The results can be shown best in tabular form (Table 1).

In this series the time of appearance from the healthy kidney ranged from six to thirteen minutes, and corresponded fairly closely with the appearance time as determined in the test for total function. The percentage excreted by both kidneys together in the first fifteen minutes after the color appears should, judging from this series, amount to 6 or 8 per cent. when the total for one hour is about 40 per cent.

Following the intramuscular injection of phenolsulphonephthalein, the amount excreted in fifteen minutes is rather too small for careful estimation. Inasmuch as it is desirable to reduce the length of time required for the test, and since a much greater quantity of the dye is excreted in the same time after intravenous injection, this method has superseded the others for the past two years.

The results obtained are shown in Table 2.

The time of appearance from healthy kidneys after the intravenous injection of phenolsulphonephthalein ranges from one and one-half to six minutes, and in most of the cases is about three minutes. From the diseased kidney, the color may appear with very little delay, in spite of a function only one-quarter or one-sixth as great as that of the sound kidney. The percentage of phenolsulphonephthalein put out in fifteen minutes by the healthy kidney when its fellow is dis-

TABLE 1.—AFTER SUBCUTANEOUS OR INTRAMUSCULAR INJECTION

Condition of Diseased Kidney	Sound Kidney		Diseased Kidney		Total for 1 Hour	
	Appearance Time, Min.	Per Cent. in 15 m.	Appearance Time, Min.	Per Cent.† in 15 Min.	Appearance Time, Min.	Per Cent.
1. Tuberculosis	7	3	No color*	±	8	28
2. Tuberculosis	13	6	No color*	0	14	40
3. Essential hematuria (nothing found at operation but hem. stopped	10	5	18	3	10	40
4. Bilateral infection			8 9	2 2	7	38
5. Pyelonephritis	8	3.5	13*	2.5	12	41
Two cases in which the urine was collected for 30 minutes:						
6. Tuberculosis	7	15	15*	±	—	—
7. Tuberculosis	6	16	No color*	0	6	35

† The sign ± indicates trace.

* Ureter not catheterized; color obtained from bladder.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

eased may range from 13 to 30 per cent. Case 11, in which there was proved to be no leakage about the catheters, put out 13 per cent. from the sound and 4 per cent. from the diseased side in fifteen minutes, yet the total function was 45 per cent. In nine cases out of the fourteen the function of the healthy kidney was between 20 and 30 per cent.; six of these put out 25 per cent. or better. To compare the work of these kidneys, whose mates were diseased, with pairs of healthy kidneys, we selected two outpatients who were under treatment for chronic urethritis and whose urines were normal, gave 6 mg. phenolsulphonephthalein intravenously and took the urine from the bladder at fifteen-minute intervals after the first appearance of color. The percentages were estimated by means of the Dubosc colorimeter.

Case T.—Appearance time, five minutes; first period, 60 c.c., 30 per cent. Second period, 50 c.c., 21 per cent. Third period, 80 c.c., 18 per cent.

Case H.—Appearance time, three minutes. First period, 110 c.c., 33 per cent. Second period, 120 c.c., 19 per cent. Third period, 100 c.c., 8 per cent.

Thus we see that in the first fifteen minutes a normal kidney should put out half of about 30, or 15 per cent. Only three of the sound kidneys in this series put out as little as that; most of them were already well along towards taking on the work which both kidneys should do.

As regards the output of the diseased kidney, we find in this series a fairly definite relation existing between the amount of dye excreted and the amount of kidney tissue. If there is little or no infection, this relation is very constant; if infection is an important feature, the function may be temporarily lowered by the interference of the exudate with the metabolic processes. The increase of function in Case 14 occurring after the removal of stones illustrates this. Case 13, with a good-sized stone in the pelvis, and no infection, showed a function of 25 per cent. Tuberculous kidneys in several instances have shown an unexpected decrease in function, considering the apparently large amount of healthy tissue in the gross specimens. In case 21, for example, with relative functions of 18 and 7 per cent., the diseased kidney showed nothing wrong except an abscess 2 cm. in diameter, and a sprinkling of miliary tubercles throughout the upper pole.

In the main, the phenolsulphonephthalein test in our hands has reported the value of each kidney with great faithfulness. Two cases in our series illustrate its accuracy unusually well, and will bear reporting in more detail.

Jan. 27, 1912, a woman of 29, Case 16, was cystoscoped. Clear urine and 10 per cent. dye were obtained from the left kidney; infected urine and 12 per cent. from right. The pelvic capacity of the right kidney was 40 c.c. and because of pain in that side the right kidney was explored by Dr. Hugh Cabot, the ureter freed and the kidney suspended. The pain was only partially relieved; the infection continued, and in July, 1913, the ureters were again catheterized. From the left kidney 30 per cent., from the right only 9 per cent., was obtained. It was obvious that the right kidney was losing ground, while the left was taking over its work. In September, 1913, the right kidney was removed and found to be one-third the size of a normal kidney and to consist chiefly of calices and pelvis.

The other case is that of a man of 37, who two years before had had a right-sided "nephritic abscess" opened and drained. Cystoscopy showed a slightly ragged, red orifice on the right. The left was normal. Both ureter catheters yielded clear, sterile urine, that from the right kidney containing very rare small granular casts. Intravenous phenolsulphonephthalein appeared in five minutes from the left, and in thirty minutes 15 per cent. was collected. Although the right catheter drained well, no color appeared during the thirty-five minutes consumed by the test. I was rather surprised at this and wondered whether the test was at fault. But a total intramuscular function showed an appearance time of 12 minutes with only 18 per cent. excreted in the ensuing hour. This confirmed the diagnosis of a useless kidney on the right and a left kidney which had not taken on the other kidney's burdens, and was in fact slightly below par for one of two normal kidneys.

The objection has been made that in carrying out this divided function test, the function of a kidney is liable to be depressed or in some way altered by the passage of the catheter up the ureter. An examination of the cases quoted above will show that in only two cases was the color obtained more quickly without ureteral catheterization than with it, and in these cases the difference was only one minute. The promptness with which healthy kidneys excrete the drug even though their ureters are catheterized upsets this objection. The amount of dye excreted, furthermore, as the tables show, corresponds fairly closely with the total hourly amount obtained from the bladder. Com-

TABLE 2.—AFTER INTRAVENOUS INJECTION

Condition of Diseased Kidney	Sound Kidney		Diseased Kidney		Total (Intramuscular)	
	Appearance Time, Min.	Amount in 15 m. Per Cent.	Appearance Time, Min.	Amount in 15 m.* Per Cent.	Time, Min.	Amount, Per Cent. 1 Hour
8. Hypernephroma	6	10	12	3	....	40
9. Echinococcus	4	25	5	2	13	38
10. Stone occluding ureter	3	25	....	0	....	....
11. Renal stone; thin cortex	3.5	13†	8.5	4	8.5	45
12. Renal stone; kidney destroyed	4	11	10	2	....	43
13. Bilateral renal stone (rt. not infected)	4	25	Right, 6	4	....	....
14. Bilateral renal stone 9 months after operation on	....	....	Left 7	11	15	20
right side	....	....	9	8	12	41
15. Pyonephrosis	3.5	25	8	±	....	...
16. Pyelonephritis	3.5	19	3	12	....	...
18 months later	3	30†	8	9	....	...
17. Tuberculosis	6	20	.......‡	0	....	...
18. Tuberculosis	1.5	28	2.5	4	11	24
19. Tuberculosis	4	25	5.5	±	....	...
20. Tuberculosis	3	25	.......‡	0	....	...
21. Tuberculosis	4	18	5	7	6	35

* For trace, the sign ± is used. † No leakage. ‡ Ureter not catheterized; color obtained from bladder.

pare the amount excreted by healthy kidneys with ureters catheterized with the standard set by the two intravenous, uncatheterized cases. The latter excreted 30 and 33 per cent., respectively; that is, 15 and 16.5 per cent. from each kidney; the percentage of these patients whose ureters were catheterized were 10, 25, 25, 13, 11, 25, 25, 19, 20, 28, 25, 25, 18. There is no inhibition of function here.

The point has been made, with much justice, that one cannot be certain of the accuracy of his results unless he has proved the absence of leakage about the ureter catheters by getting no color from the bladder while the catheters are still in place. With this position I heartily agree, but it has not been my experience to find leakage very frequently; if the ureter is not dilated, a No. 6 flute-tip catheter passed well into the renal pelvis and then withdrawn until it runs freely may be expected to carry off all the secretion of that kidney. The establishment of this point is of value in doing cases in which one ureter cannot be catheterized. In this series there are eight such cases; in four of them, no color appeared in the bladder at all, in one just a trace; in the others, the color did not appear from the bladder catheter until five, six and eight minutes after it appeared from the ureter.

The chief points drawn from this not very extensive study are these: After the intravenous injection of 6 mg. phenolsulphonephthalein, each kidney of a normal pair begins to excrete the dye in about three minutes, and in the next fifteen minutes puts out about 15 per cent. If a sound kidney which has a diseased fellow excretes 15 per cent., it is at least equal to one normal kidney; if more than that, it is already taking up the work of both. Such a kidney, according to our experience, may put out 30 per cent. in this period, or as much as two normal kidneys combined. Neither the time of appearance nor the amount excreted is materially influenced by the passage of ureter catheters, and the results of the test agree with great constancy with the actual pathologic condition in the kidney.

309 Marlboro Street.

ABSTRACT OF DISCUSSION

Dr. B. A. Thomas, Philadelphia: It is agreed that phenolsulphonephthalein is a useful functional kidney test. I do not believe, however, that, even in the capacity of quantitative determination, it supersedes in usefulness indigocarmin. In fact, I do not believe that it equals it, so far as relying on any single functional kidney test is concerned. We all agree that a metabolic quantitative study is the ideal procedure, but impracticable; on the other hand, that two or more tests are more valuable than one. I also believe that, irrespective of the quantitative determination, the use of indigocarmin qualitatively by the method of chromo-ureteroscopy, that is, its elimination from the ureteral orifice after intramuscular or preferably intravenous injection, has a slight advantage over phenolsulphonephthalein. In three cases I have found it absolutely impossible to catheterize the ureters even with a No. 5 catheter. There was undoubtedly a congenital stenosis of the ureteral orifices. Consequently, in such instances, any functional kidney test dependent on synchronous bilateral ureteral catheterization would prove useless. I therefore ask Dr. Smith or anyone using phthalein, if it be desirable to determine unilateral function, how is the test to be applied under such conditions? By chromo-ureteroscopy, on the other hand, it is easily possible to determine the function of the respective kidneys. Again, occasionally we will find, particularly in prostatic enlargement, the ureteral orifices so placed that it is impossible to catheterize even one ureter. Here indigocarmin once more enables us to determine the functional renal efficiency, unilateral as well as bilateral. Moreover, in quantitative determination dependent on ureteral catheterization one is not always sure of collecting the total amount of urine excreted. I have frequently seen, during the employment of indigocarmin, leakage around the catheter into the bladder. Ureteral lumina vary greatly in individuals. I believe the index of elimination, that is, the ratio of the quantitative determination of indigocarmin elimination for the third hour with the first hour, will give a more definite and reliable index of kidney stability and function than will the simple quantitative determination for the first two hours alone, because it takes into account the onset, the duration—the onset being delayed in disease, and the duration being prolonged—and also the ratio of the quantitative determination. I hope this method will be taken up by others and investigated and that it may prove to be a more definite and reliable indication of renal efficiency. I see no reason why it should not be applied to phthalein as well as indigo, although, in my experience, indigocarmin has been the more reliable.

Dr. M. H. Wyman, Baltimore: If one cannot catheterize either ureter in using phthalein, it seems to me it would be easy, although I have never tried it, to make the bladder solution alkaline. If the solution is alkaline, the first time a little spurt came into the bladder the time of appearance could be noted as easily as with indigocarmin. So I do not think that is any argument against phthalein.

Dr. William E. Stevens, San Francisco: There seems to be a tendency at present to limit ourselves to a single test. In my opinion this is a mistake. The indigocarmin certainly is of great value, especially when it is impossible to catheterize the ureters. The phthalein test is the most popular in this country, but in a series of about 112 experiments, using simultaneously the phthalein, phloridzin and quantitative urea tests, a marked parallelism was noted in all three. The urea test did not prove to be so valuable as the phthalein and phloridzin, but in our experiments the phloridzin, both as regards time of appearance and the quantitative estimation, were certainly as valuable as the phthalein.

Dr. George G. Smith, Boston: I have no animosity against indigocarmin. I use it quite frequently when I cannot catheterize the ureters. I think it is of great value under those conditions; but phthalein is a drug easy to handle, the amount excreted is rapid of determination, and what I have tried to show in my paper is that its use is accurate and reliable. Hence, I believe it is a perfectly safe drug to use. I do not see that the index which Dr. Thomas speaks of, the comparison of the first hour's output with the third, is of any value in ureteral catheterization and divided function, because in work in a clinic one cannot keep ureter catheters in place that long.

A Clean Bakery.—Those who are familiar with the insanitary conditions surrounding the handling and sale of foods in this city in the past realize that considerable improvement has taken place, particularly within recent years. The dealers and handlers of food have gradually come to realize the importance of cleaness and decency and, still better, are learning that it pays. Witness the following sign, advertising a bakery in Avenue B, the text being reproduced verbatim from the column conducted in the *Evening Sun* by Don Marquis:

"Our bakery is not in a basement where it can't come in fresh air, and what makes not to be clean.

"But our Bakery is on the grand floor windows with enough fresh air and sunshine and that means clean enough.

"We'll be very much pleased to show all apartments and machinery from our Bakery which is made after the Sanitary Rules from the Board of Health.

"We BAKE fresh every hour.

"We burn the COFFEE ourselves."—*Weekly Bull. Dept. Health*, New York City.

observed so often in tuberculosis of the bladder, rendering it impossible to use a retention catheter. It is marvelous to witness at times the relief afforded by ureteral catheterization and pelvic lavage. It is more particularly striking when a hydronephrosis exists.

The drugs most useful for this lavage are silver nitrate, aluminum acetate and mercuric oxycyanid, the first in a strength of from 1 : 20,000 to 1 : 10,000, which is quite as efficient as stronger solutions, and does not occasion disagreeable kidney colic; the aluminum acetate in a 2 per cent. solution, and the mercuric oxycyanid from 1 : 10,000 to 1 : 5,000. The lavage should be repeated once in five days. If the disease is confined to one kidney the ureteral catheter may lie in the kidney pelvis for several days.

Colon bacillus infection is quite a common disease in children. The majority of such cases will yield to an alkaline treatment and sweat baths. The hexamethylenamin preparations, when used with sodium benzoate, are also of benefit.

Vaccines are very useful in colon bacillus infections, more particularly autogenous vaccines. By their rational use it is quite possible to bring about the disappearance of pus and albumin from the urine and to banish the fever, but without the other measures they do not cause a disappearance of the microbes.

I would not care to treat serious cases of colon bacillus infection without these vaccines which have to be used with great caution. An overdose is often followed by a violent reaction with severe constitutional symptoms and aggravation of local conditions. I have one patient who easily takes a dose of 1,000 millions and I have another who at no time has been able to take a dose greater than 50 millions. Several times when I have tried to increase this dose the site of the injection has become inflamed, tense, excessively painful and to all appearances suppuration seemed about to take place, while chill, high fever, intense pain in the muscles of the back, headache, nausea and great mental depression followed.

The vaccines have appeared to do best when given at intervals of four days. If for any reason one is obliged to omit the treatment for a longer period than ten days, it is wise to return to the initial dose of from 10 to 25 millions.

The treatment of multiple abscesses occasioned by this infection; or of grave pyelitis or pyelonephritis that does not yield to general medical treatment plus drainage, or when the case is explosive and confined to one kidney, is the same as that for grave renal suppurations arising from other infective organisms.

PYELITIS GRAVIDARUM

Pyelitis gravidarum may be considered with coli infections. Pyelitis in pregnant women is a disease of great gravity. In 70 per cent. of the cases a colon bacillus is the infecting organism. It frequently attacks the kidney structures and destroys them and is often complicated by the formation of stones. With the pressure of the gravid uterus on the ureter occasioned by the drag of the uterus on the bladder there exists a certain atony of the muscles of the ureter, and the possibility of an ascending colon bacillus infection is greater under these circumstances than under any other that we know, for there are present all of the elements favorable to it: increased intravesical pressure, pathology of the ureteral mouths and the possibility of retrograde peristalsis in the presence of motile bacilli.

The attack is usually not sudden; a bacteriuria often exists for weeks or for months, and it is probable that in many instances a pyelitis in a mild form has existed from childhood, since colon bacillus infection of the kidney is very chronic and is often seen in female children. It is not possible always to differentiate between a pyelitis and a pyelonephritis, for casts and tubal epithelia may be present in the urine in both, from a previous nephritis existing independent of the pus infection.

The initial symptoms will sometimes resemble pneumonia, the pain in the side being close to the diaphragm causes interference with respiration and cough, but never expectoration. Persistent nausea and vomiting in the later months of gestation are very suspicious, especially when accompanied by intermittent pyuria. It is entirely different from the vomiting of the early months of pregnancy. Whenever in a gravid woman fever occurs, the cause for which is not exactly plain, and there is even very slight pain on pressure at the costovertebral angle on one side, it is well to suspect colon bacillus infection of the kidney pelvis as the trouble present, and search for it in the urine obtained by ureteral catheterization. In these cases there may or may not be a leukocytosis. If there is, it is never very high.

TREATMENT

An attention to the prodromes, ureteral catheterization and lavage will often abort an attack. Rest in bed, a milk diet and diuresis are necessary. If the child has a right lateral position, have the woman lie on the left side, and vice versa. Salol should be given in large doses. If these simple measures do not succeed, ureteral catheterization with lavage often will. The use of autogenous vaccines and, in persistent cases, a retained ureteral catheter should be tried. If the febrile symptoms do not then abate or the vomiting cease, choose between induced labor or a surgical operation, which should be nephrotomy or nephrectomy according to the condition of the affected kidney as indicated by the functional tests and by its appearance and feel at the time of operation. The prognosis is usually good for the mother as to life, but not good as to the production of a permanent cure without surgical interference. It is always bad for the child. In general, induction of premature labor is advisable, unless some special indications exist for not doing so, because the symptoms usually disappear very rapidly after the emptying of the uterus; if they do not, then nephrotomy or nephrectomy is to be resorted to. If nephrotomy is done the kidney should be sewed to the edge of the wound in the lumbar muscles and a thin, soft, pure rubber drain introduced into its pelvis and the kidney irrigated through and through by means of a ureteral catheter every two or three days with a solution of silver nitrate, mercuric oxycyanid or aluminum acetate.

A pyelitis due to any other infective organism should be treated in the same manner. In cases of multiple abscesses, pyonephrosis, it is better to do a nephrectomy primarily.

TUBERCULOSIS

Renal tuberculosis is a progressive infection, slow in its development, often remittent, probably incurable by medical means, due to the deposit of the bacillus of Koch within the tissues of the kidney by the blood-stream and perhaps sometimes by way of the lymph-channels.

It presents different types: First, the miliary form, distinguished by the deposit in the cortex of widely disseminated foci of granulation tissue containing tubercle bacilli; a complication of advanced pulmonary tuberculosis or a part of a general tuberculosis and having no diagnostic symptoms beyond the occasionally suspicious occurrence of renal hemorrhage or albuminuria and infiltration and irritation of the mucous membrane about the mouths of the ureters.

Second, a chronic parenchymatous nephritis with abundant albuminuria, scanty urine and dropsical effusions, without cardiac hypertrophy, and without increased arterial pressure. This occurs occasionally in the later stages of pulmonary tuberculosis and is of rapid development; the urine is irritating to the trigon, the bacillus cannot often be found, but guinea-pig inoculations are usually positive.

Third, it is asserted by some writers that there exists a tuberculous interstitial nephritis.

Fourth, and most important, is the form characterized by a slow infiltration of the parenchyma with minute foci of infection which tend to join with each other, forming circumscribed nodules or masses that soften or ulcerate and undergo caseous degeneration. Fortunately this process is at the beginning almost invariably unilateral, and occurs as a rule in persons who are not affected with active tuberculosis, but have lesions that appear to be cured, or present no evidence of tuberculosis. This is at the same time the most hopeful and the least hopeful of tuberculous changes in the kidney, and is the one usually meant when renal tuberculosis is spoken of.

SYMPTOMS

At its commencement there is no symptom or group of symptoms that is diagnostic. The first of all is vesical irritability, soon followed by the appearance of albumin in the urine and perhaps hematuria. The cystalgia is apt to be disregarded for a long time, the albumin to remain undiscovered until a free renal hemorrhage alarms the victim and sends him to the physician. Even then most generally the significance of the syndrome is not understood. Renal stone is a rare disease, renal tuberculosis a common one, yet the average consultant will search diligently for the calculus that is not there and forget all about the tuberculosis that is. The presence of pus in the urine is not long delayed and with it the agent of the process, the bacillus of Koch, appears.

It is important that the exact significance of this picture should be appreciated by every physician. Be suspicious of every case of prolonged vesical irritability the origin of which is not entirely clear, for therein a renal tuberculosis may be ambushed—a chronic infection, slow in its development, progressive, involving finally the entire urinary system, and mercilessly fatal—more important by reason of the fact that from its anatomic peculiarity early skilful surgical aid will effect a permanent cure in more than 50 per cent. of the cases.

MODE OF INFECTION

How does the bacillus invade the kidney? By the blood-stream in all but the rarest of instances; the process is exactly the same as that which takes place in the other hemic infections. When open tuberculosis, patent to the dullest clinician, active pulmonary lesions, joint or bone affections, or degenerations of the genital organs are present, the source of infection is so plain that no mistake can be made. Much more often a nidus of walled-in bacilli, the remnant of an infection of childhood, unheeded or unsuspected, exists in the lymph-nodes of the mediastinum or the neck; and under the depressing influence of trauma, acute inflammatory disease of neighboring parts, or impoverishment of blood following vigil, or overwork or overplay in vitiated air, softening of the caseated gland takes place, discharging sparse bacilli into the blood-stream attached to tiny fat droplets or tissue shreds, minute emboli of such low vitality that when arrested in the capillaries of an injured or diseased kidney they colonize slowly and without vigor, producing a form of renal tuberculosis which is from the onset essentially chronic, the clinical form which is the most important—that now under consideration—unilateral, nodular, caseating renal tuberculosis.

Why tuberculosis of any of the paired organs should almost invariably at the start be unilateral is difficult to explain, but it is a clinical condition of universal observation and this form of tuberculosis of the kidney is no exception to the rule; fully 85 per cent. of the cases are unilateral at the outset. It is this very anatomic peculiarity which renders them hopeful subjects for surgical therapeusis. If given time enough for development each one of these cases will eventually become bilateral infections and when they do it is too late to consider a cure by surgical interference. How long a time does this take? This varies with the virulence of the infection and the resistance of the patient. When it does occur are the bacilli derived from the original nest from which the first kidney was infected or is their source the diseased kidney itself? The researches of Israel on the rarity or banality of infection of the remaining kidney after nephrectomy for this disease give the answer of this question, for they show conclusively that the presence of a tuberculous kidney in the body of a person predisposed to tuberculosis is a greater danger to its healthy fellow than the presence of infective foci elsewhere.

It is interesting to watch these patients year after year when operation is refused. The great majority of them present an infection of the second kidney within three years and only about 20 per cent. of them live beyond the fifth year. In a few the disease appears for a long time to be really benign, the hemorrhages cease, the urine clears up, the vesical symptoms ameliorate and almost or entirely disappear, there is no inconvenience, the cystoscopic picture becomes almost normal, no tubercle bacilli can be found and even the guinea-pig test may be negative. This apparent cure is not accomplished at once but slowly, and to any agent that may have been administered or to any medical cult that may have been employed, a cure is credited. But, alas, these cures are but frauds; they do not exist; it is only the segregation of the infected focus that has taken place; firmly walled off from the sound kidney structures by inflammatory tissue which for the time being is sufficient barrier to their extension, and cut off from the urinary stream by the automatic ligation of the calix or calices of the diseased portions of the kidney, or perhaps the side-tracking of the entire kidney by the stenosis of its ureter, the bacilli sleep peacefully in their cheesy storehouse until constitutional disease or trauma or renewed activity once more liberates them. However long the interval of inactivity may be, the post-mortem table never shows these cases as cured. Once started, the disease is subject to many remissions but never disappears. The pity is that when we encounter a case there is no way to tell whether its progress will be slow or rapid; we only know that left to itself it in time will be fatal.

The kidney does not present on section the same appearance in all of these cases, but one is always impressed by the pathology of its incurability. Occasionally one finds calcified lesions but always with active nodules beside them; just as rare are perfect cicatrices indicating fibroid healing of a nodule, for beside or within them active foci can be found. The whole kidney, or one pole, becoming a cheesy cavern, often breaks down and is discharged through the ureter; but its walls, filled with purulent urine, are always covered with tuberculous granulations. Even the clear contents of the cysts found in excluded kidneys is fatal to guinea-pigs.

Of all the chronic infections to which the human body is subject, tuberculosis is the most kind. Judging from the experience of the operating room and the section room and the medical clinic, the enormous majority of those attacked by tuberculosis of the lungs, bones, lymph-glands, skin, etc., recover. Then why does not the kidney get well? Perhaps it does in the miliary forms and in tuberculous nephritis, but not in the caseous forms. There are two plausible reasons for this. The first is the universal tendency to destruction of the kidney tissue by the caseous degeneration, and the other the continued interference with the circulation of the organ and the retention in it of the urine loaded with tubercle bacilli, caused by the infection of the walls of the ureter and its obstruction by the inflammatory processes engendered thereby.

DIAGNOSIS

Recognition is easy to the instructed; very common, yet the medical profession in general never diagnoses more than one out of five of these cases until the kidney is practically destroyed. In addition to the existence of vesical irritability, pus, tubercle bacilli and perhaps blood will be found in the urine obtained by a sterile ureteral catheter from the pelvis of a suspected kidney. The patient should have a liberal quantity of water for at least two hours before the catheterization, and the urine should be collected for at least one hour. If acid-fast bacilli are not found or very few, or only spores are found after prolonged centrifugal sedimentation, the sediment should be injected into a guinea-pig, or the complement fixation test of Debré and Paraf, which consists of the demonstration of a tuberculous antigen in the urine, should be applied.

To an expert in cystoscopy the diagnosis may be surmised with an almost positive certainty from the presence of a peculiar injected appearance of the mucous membrane of the trigon which looks as if finely powdered paprika were blown with great force into it. There is also edema and not infrequently ulceration of the mucous membrane within and about the trigon and at the vesical neck. There is no distinct diagnostic appearance of the ureteral meatus, for this may be concealed in a mass of granulation tissue, deformed and constricted by ulceration, or lie open like a golf hole, or be only slightly puffed by the irritation of the bacterins. The chromogenetic functional tests aid only in determining the secretory capacity of the kidney without indicating the cause of its depressed function.

If the edema or ulceration of the trigon or stenosis of the ureter makes it impossible to catheterize the ureters, exploratory examination of each kidney should be made to determine which is the diseased one. We cannot be too strongly reminded of the fact that we must distrust the evidences of a tumor of the loin discovered by palpation when we are seeking the diseased kidney. The mass may be only a hypertrophied healthy kidney or it may be the sole functionating one also not free from disease. Each kidney should be brought from its bed on to the loin and its entire surface, and more particularly its pelvis and its ureter, viewed and palpated for pathologic changes. A diseased ureter will be thickened and adherent. The fatty capsule about a diseased kidney will be adherent in places to the true capsule, sometimes so intimately associated with it that it is impossible to separate them. In case of doubt it may be necessary to open both ureters some distance from the kidney and obtain a specimen of urine from them for microscopic examination before deciding which kidney is the diseased one.

Having made our diagnosis and ascertained the prognosis in the special case, what are we to recommend to our patient? There are but two ways of treating him, either by the general treatment for tuberculosis: climatic and hygienic measures combined with diet, drugs of the creosote class, and tuberculin; or we must subject him to surgical exclusion of the diseased kidney, nephrectomy. The combined work of many skilled urologic surgeons in all parts of the world during the past ten years has demonstrated that the only way to cure a kidney affected with unilateral nodular, caseous tuberculosis is nephrectomy.

It results in the immediate relief of 75 per cent. of the cases and in the permanent cure of 50 per cent. of them. If the surgeon is skilled in this class of operations, the immediate mortality should not exceed 6 per cent., and is for some as low as 1 per cent. The natural history of the disease shows that though remissions are many the progress is always relentless, eventually ending in death; but before the advent of the lethal day the diseased kidney invariably infects its fellow; and when the patient does not go out by reason of his renal tuberculosis he dies of tuberculosis of other organs. If the disease is far advanced and both kidneys are tuberculous, if one causes great distress and the other shows sufficient functional capacity to carry the burden of life, the less normal one should be removed. This operation is of course palliative only, for death usually takes place in the first year after operation.

Nephrotomy is not curative and should be resorted to only in distinctly suppurating cases, especially when the process has become perinephritic and when the general condition of the patient will be improved by temporary drainage awaiting a nephrectomy, to be done as soon as it is safe.

I find that it is not the explanation of the percentage of permanent cures resulting from the removal of the diseased kidney that moves many to submit to nephrectomy, but it is the atrocious and almost continual pain in the bladder that drives them to it in desperation, and usually the early stage has passed when this occurs. I very often have had the opposition of the medical adviser, for a large percentage of the older practitioners of medicine are skeptical about the existence of renal tuberculosis or are fearful of the results of operation, or believe that the patient can be cured by medical means.

"To prevent disappointment it is best to look on tuberculin as of assistance in the treatment of tuberculosis of the kidney and not as a specific remedy therefor." In forming an opinion of its value we must use as a base the reports of those who have had the patience to use it, over long periods of time, in numerous cases that have answered to the requirements of a perfect diagnosis: the direct demonstration of tubercle bacilli in an acid purulent urine received in a sterile container from a sterile ureteral catheter introduced into the pelvis of the kidney of a person afflicted with polyuria, dysuria or both; or the development in a guinea-pig inoculated with the sediment of this urine, of tuberculosis at the point of inoculation.

The evidence of experienced operators, who have frequently nephrectomized such patients with a low mortality both immediate and remote, yet who have had the courage thoroughly to test out the merits of tuberculin, is the best evidence of all, for they know and appreciate better than others the unreliable history of the disease and its unaccountable vagaries—how the individual develops a marked resistance to reinfection both from within and without, accounting for the slow progress of renal tuberculosis, its remissions of disturbing symptoms, and sometimes of apparent cure for months and for years, by the encapsulation and sealing up of the abscess cavity, thus introducing an element of doubt always into the origin of any favorable results following the use of tuberculin. Its use as a remedy in tuberculosis of the kidney can never be other than empirical. Many who have sung the praises of its curative powers have not always been very careful to make sure that their cases were tuberculosis of the kidney and were satisfied to report a cure when their patients increased in weight and the vesical symptoms decreased in intensity. There is no case on record that I have been able to find, that answers the full requirements of a cure of tuberculosis of the kidney by tuberculin; and yet there are many intelligent urologic surgeons who believe that it is possible if the disease is recognized early that it may be cured by hygienic and climatic measures if aided by tuberculin, and all agree that it is at least a useful placebo in bilateral renal tuberculosis, and in those cases in which one kidney having been removed the remaining one is attacked by the bacillus. Firmly convinced that in unilateral nodular caseous tuberculosis of the kidney, in the presence of a sound companion and without the existence of any other contraindication thereto, nephrectomy is the only remedy that promises a permanent cure, I have found it very difficult to convince the sick man and his friends of the benignancy of the operation in skilled hands and the necessity therefor, and so have been compelled to treat very many cases against my judgment as what was best, by tuberculin, duotal and hygienic measures. The clinical results in a few instances have been astonishing and in many fairly satisfactory, and were it not for the inexorable average history of unilateral tuberculosis of the kidney, did we not know that the walled-in abscess may contain living bacilli that hibernate for years only to be released by some mechanical insult or some lowered resistance giving rise to metastatic autoinfection again, I might well believe I had seen cures effected by tuberculin.

It is not a matter of much importance what particular preparation of tuberculin is used. The Belgians, and many of the French, use Deny's B. F. In Germany and America Koch's O. T. and N. T. and B. E. are in most general use.

The dose, however, is not a matter of indifference. It should be be small, always very small, at first. One that will equal from 1:1,000,000 to 1:100,000 mg. of O. T. is always sufficient to start with and it should be raised very gradually, avoiding the occasioning of a local or general reaction. The intervals of its administration should be four or five days. Used in this way it helps many and injures none.

Lissner Building.

ACUTE UNILATERAL HEMATOGENOUS INFECTIONS OF THE KIDNEY *

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BOSTON

At the meeting of the American Association of Genito-Urinary Surgeons in June, 1912, I reported a series of cases of acute unilateral hematogenous infection of the kidney, some treated by nephrectomy, others by decapsulation or drainage, and another group by non-surgical measures.

At this time it is my desire to relate the subsequent course of these patients and to refer to others which have come under my observation since that time. Tuberculosis, the most common of all hemic infection of the kidney, is not to be considered.

Suppuration within the kidney parenchyma, as is well known, results from infection by one or another of certain varieties of micro-organisms taking place usually in one or two ways, either as an ascending infective process from the lower urinary tract or brought to the kidney by the blood stream; yet rarely the kidney becomes acutely infected by adjacent septic foci or by penetrating wounds.

Ascending kidney infection is not the subject under consideration, and will not be considered, yet it must be stated that it is quite impossible in some instances of *Bacillus coli* infection of the kidney, to be certain that its origin is hemic and not ascending.

The acute renal infections of hematogenous origin are of two distinct classes: one induced by infective or toxemic conditions, for example, nearly all of the infections which give rise to general diseases such as diphtheria, scarlet fever, measles, small-pox, pneumonia, typhoid fever, etc. The disturbance within the kidney is due, in this class, to the action of toxic substances elaborated by the virus of the special disease which is in part eliminated through the kidneys. While the toxic substances of these acute general diseases conveyed to the kidney by the blood stream induce cellular necrosis, it is rare that suppuration occurs, and this type of hematogenous kidney disturbance remains medical rather than surgical.

It is the second, rather smaller, yet more serious, class of kidney infection of hematogenous origin, whereby the kidney is invaded by the micro-organisms themselves, resulting in acute inflammation and suppuration, that commands our attention from a surgical standpoint.

Acute suppurative nephritis of hematogenous origin is a condition resulting from the invasion of the kidney by certain micro-organisms, in particular by the pyogenic cocci and the colon bacillus. It is theoretically of a metastatic nature, and when encountered in both kidneys is usually consecutive to septic endocarditis or other septic affections elsewhere in the body. When it occurs in but one of the two kidneys the primary focus from which the organisms find their way to the kidney has seldom been determined; yet there are some instances in which acute tonsillitis, osteomyelitis and similar acute diseases of pyogenic origin may be correlated with an acute hemic infection of the kidney. Israel feels that he has been able to trace such renal infections to such simple infections as furuncles and paronychia.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

PATHOLOGY

The pathology of acute unilateral hematogenous infections of the kidney is quite different from the acute bilateral kidney infections. The latter are an expression of a general septicemia or pyemia in which the kidneys participate. The former, the acute unilateral kidney infections of hematogenous origin, are not a part of general pyemia, but find their origin in the lodging of a minute embolus carrying one or several organisms in the terminal vessels of the kidney. It is believed that the process may be started by a single micro-organism.

The condition starts not by multiple simultaneous points of infections throughout the kidney, as the lesions observed in the kidneys removed at operation might suggest, but as a single focus in the cortex of the organ. When the organisms settle in the minute capillary vessels of the glomerulus, an inflammatory reaction is set up around the glomerulus, and the surrounding tissue is infiltrated with the products of inflammation. From the primary focus of the infection other areas are secondarily involved by the infectious material gaining access to other tubules, to the lymph spaces and through the vessels in the connective tissue stroma. The infection thus is more or less rapidly spread through these channels to other parts of the organ.

The pathologic process originating as described above is of two distinct types: (1) *abscess formation,* and (2) *a diffuse inflammatory process without breaking down of tissue.*

In the former type of the disease, *abscess formation,* the kidney is found somewhat enlarged from congestion, and disseminated through its substance are small separate foci of suppuration or miliary abscesses surrounded by areas of congestion. In the early stages of the disease these minute abscesses are often observed in the cortex just beneath the capsule. From here other parts of the organ are secondarily involved, as just mentioned. If the process continues, these foci may enlarge, coalesce and form abscesses of larger size which may rupture the kidney capsule, and invade the perirenal fat, resulting in a perinephritic abscess. For the infection to complete this cycle, the resistance of the individual must be great and the virulence of the infecting organisms comparatively slight, as the systemic toxemia from this disease is rapid and death usually occurs before the process develops to this stage. The organisms producing this form of kidney inflammation are the pyogenic cocci, the *Staphylococcus pyogenes albus* and *aureus,* and the *Streptococcus pyogenes.*

The second type of the disease, *a diffuse inflammatory process spreading through the kidney substances, but not resulting in focal abscesses or solution of tissue,* has the same sequence of events in its pathology when of hematogenous origin. This type of the disease presents a pathologic condition more commonly the result of an ascending infection, but is encountered as a process of hematogenous origin and results not from an infection of the organ by the pyogenic cocci, as does the abscess type, but by the colon bacillus.

The difference in the severity of the process depends on the lesser virulence of the infecting organisms. The organ is found to be enlarged from congestion. There may be subcapsular areas of more or less acute reddening, and on section the organ is found presenting irregular, circumscribed, acutely reddened or pale yellowish areas involving the cortex and pyramids or involving nearly the whole organ, but without solution of tissue. In the early stage of the process these isolated areas are distinct and are seen as irregular, acutely reddened patches with the edges streaked downward into the pyramids. As the inflammatory process subsides, these areas lose the acute red color and are replaced by tissue of a paler character. In some instances the whole kidney may present an acutely reddened surface, owing to the acute process involving the whole organ. This form of the disease undergoes resolution without focal degeneration of tissues, and when seen after the acute process has subsided, presents paler areas, dependent on the stage of the connective tissue repair process.

By studying the clinical course of these two forms of the disease, it becomes evident that the clinical signs differ in some respects, and each has a definite relation with these two different pathologic conditions. The subjective and objective signs which the patient presents should suggest the type of process at work in the affected kidney, and these two types of infection should be recognized on inspection of the diseased organ at the time of operation, for experience has shown that these different types of infection do not require the same form of treatment. While the kidney containing numerous focal abscesses requires nephrectomy, less radical measures suffice in the diffuse, non-suppurative form of infection.

From the *clinical aspect* of the subject the picture which *unilateral multiple abscess formation* produces is an acute disease which may or may not be ushered in by chill. There is a rapid rise of temperature to from 102 to 105 F., and an early acceleration of pulse rate usually to 120 or higher, occurring often within twenty-four hours following the onset. Sepsis or toxemia and a high leukocytosis develop rapidly. Pain on the side of the affected organ, abdominal tenderness, muscular rigidity and spasm are found on the affected side. Lumbar tenderness, rigidity and spasm are pathognomonic signs of the disease. The abdominal signs are similar to those occurring in acute affection of the appendix and gall-bladder, for which this disease of the kidney is often, if not usually, mistaken. Unfortunately, the urine in this disease does not excite suspicion of the true condition, as it is usually quite normal in its gross and microscopic appearance, and genearlly contains but little albumin and only a small amount of pus and blood-cells, because the abscesses find no avenue of escape through the collecting tubules, which are either plugged by the product of inflammation or compressed by the infiltrated tissue surrounding them.

When the infection is severe, the patient grows progressively and rapidly worse, the toxemia becomes profound, delirium sets in and there is a fatal termination within a few days unless the body is rid of the infected organ. Of this form of the disease I have observed five cases. The following cases illustrate this type of the disease:

Case 1.—Woman, aged 38, entered the gynecologic service of the Boston City Hospital under the care of Dr. Franklin Newell and Dr. Ernest Young, March 27, 1912. The past history was negative, with the exception that one year ago both tubes, ovaries and appendix were removed for acute inflammation. The present illness was characterized by severe pains in the right kidney region, chills, fever and vomiting beginning three days before entrance and gradually increasing in severity. The temperature at entrance was 103.4 and the pulse 120, leukocytosis 28,000. The general condition of the patient gave every evidence of good health prior to the onset of the present illness. The physical examination showed a flushed face, throat and lungs negative, anemic murmur in the heart. The abdomen was not distended, but showed marked tenderness in the right side, less so on the left. Exquisite tenderness in the right upper quadrant and in the right loin. There was rigidity and spasm of the right rectus and lumbar spasms. Vaginal examination was negative. The urine was turbid, 1.020, acid, slight trace of albumin, no sugar or bile. The sediment was small in amount and consisted of pus, an occasional blood corpuscle and epithelial cell. The patient's condition became progressively worse during the following two days, and on the third day after entrance (six days after onset of the trouble) was extremely bad. At this time I saw the patient in consultation with Dr. Young. Her appearance was that of profound sepsis, pulse 130 of poor quality, temperature 103. There was a rigidity of the right side of the abdomen, with marked tenderness over the right kidney in front and in back. The urine at this time was only turbid and contained little pus. The leukocytosis was 18,000. An operation was advised as the only chance for life, although the risk was considered great.

A lumbar incision was made, the perinephritic fat found infiltrated with cloudy serum but no pus. The kidney was exposed and delivered. It was twice normal size, congested, and over the surface were scattered many focal abscesses from 1 to 5 mm. in diameter. The pedicle was clamped and the kidney removed. No attempt was made to tie the pedicle on account of the poor condition of the patient, stimulation and salt solution being required during the operation. The clamp was left on the pedicle; the wound drained by a spiral tube with gauze and the wound partially closed.

Twenty-four hours after operation the patient's temperature dropped to 100 and the pulse to 110. The improvement in appearance and general condition was perceptible. The clamp was removed from the kidney pedicle on the sixth day. The patient made an uneventful recovery.

The pathologic report was acute inflammation of the kidney, with multiple miliary abscesses from which *Staphylococcus pyogenes* was recovered.

Two years after operation this patient is living and well.

Case 2.—Woman, aged 32, seen in consultation with Dr. Albert Griffiths and Dr. Nathaniel Thayer at the Swedish Hospital, Brooklyn, Sept. 27, 1907. Previous health had been excellent. For two days the patient had complained of pain in right kidney region. There had been a chill, rise of temperature to 103, and urine was cloudy, containing 0.25 per cent. albumin and considerable sediment, consisting of pus, normal and abnormal blood, but no casts. The pain became more severe, and her general condition failed rapidly. When seen by me the general condition was poor, temperature 103.5, pulse 108, and urine as mentioned above. There was tenderness over the whole right side of the abdomen, rigidity and spasm of the right rectus. There was exquisite lumbar tenderness with spasm. The kidney was approached through a lumbar incision, the perirenal fat found to be edematous and adherent to the kidney capsule in the central third of the organ. The kidney when freed and delivered was found to be about one-third larger than normal and much congested. In the middle quarter an area about 1½ inches in length, of irregular surface, slightly harder than normal was found. This area extended over the anterior and posterior surfaces of the kidney to within about ¾ inch of the renal pelvis. The kidney was split in the convex border and the area observed on the surface was found to involve the central quarter of the kidney down to the renal pelvis. This area, darker than the surrounding tissue, contained several small foci of purulent material from 1 to 4 mm. in diameter. The remainder of the kidney showed only congestion. A wedged-shaped piece including the central third of the kidney and passing about ½ inch outside the infected area was resected. The upper and lower remaining thirds of the kidney were then brought together by mattress sutures. The wound was united around a tube and gage drain. The temperature dropped to normal on the second day following operation, and the abnormal elements disappeared from the urine. The patient left the hospital fifteen days after the operation with a small, clean, granulating wound. The improvement in general condition was rapid.

The pathologic report showed acute inflammation with multiple abscess formation. Staphylococi were demonstrated in the section, but the organism was not isolated. Dr. Griffiths reports that the patient has continued in good health since the operation (Sept. 27, 1907), now six years and nine months.

Case 3.—Woman, aged 34, presented the following clinical history: About five months ago she had an illness characterized by fever, pain in right side of abdomen and back. It was considered appendicitis by the attending physician. Remained in bed two weeks, at which time the symptoms had disappeared. An indefinite pain remained in right kidney region, more noticeable after physical exertion. Three months ago had a similar acute attack.

Aug. 1, 1906, the patient was again taken acutely ill, and when seen by me had a temperature of 101.8, pulse 110, and a leukocytosis of 18,000. The urine was negative except for a slight trace of albumin and a few pus and blood cells. There was severe pain in the right hypochondrium and acute tenderness and rigidity over the right rectus and in the right costovertebral angle. The appendix region was negative. During the following two days the temperature rose to 104, pulse to 120 and white count to 22,000. The urine remained the same. The pain, tenderness and rigidity became more marked and the patient began to look toxic. The diagnosis of acute inflammation of the kidney was made. The kidney was approached through a lumbar incision, the perirenal fat found edematous and the kidney about one-third larger than normal. Beneath the capsule were many small miliary abscesses. The pedicle was clamped and the kidney removed. The pedicle was tied and the wound closed with drainage. Within two days the temperature and pulse had fallen to normal and the general condition of the patient was much improved. The pathologic report was acute inflammation of the kidney with abscess formation with areas of scar tissue.

This case is of special interest because of the presence in the kidney of areas of scar tissue which may be correlated with the previous attack of illness with renal symptoms, as related in the history, and suggests that resolution of an infection of this type may take place.

Case 4.—Woman, aged 38, had had excellent health. Four days ago she was taken suddenly with severe pain in the right upper quadrant of the abdomen, accompanied by vomiting. She felt feverish and had several chills. When seen by me, Nov. 15, 1908, the temperature was 102.4, pulse 108, white count 17,200. In the costovertebral angle exquisite tenderness and marked muscular rigidity. In the right hypochondrium there was marked tenderness and rigidity, suggesting gall-bladder disease. Urine of high color, no bile, 1.014, acid, with a trace of albumin. The sediment was small in amount and contained many leukocytes, rare normal and abnormal blood-cells, hyaline and brown casts, occasionally fatty renal cells, and a few squamous epithelial cells. The patient remained in this condition without much change for four days, when it became evident that the toxemia was becoming pronounced, and the signs in the costovertebral region accentuated. The kidney was approached through the lumbar region, the perirenal fat found edematous, the kidney somewhat enlarged, and beneath the capsule could be seen many discrete abscesses about 2 to 4 mm. in diameter. A nephrectomy was performed, the pedicle tied, the wound drained; the temperature and pulse fell to normal on the third day; the abnormal elements disappeared from the urine except for the presence of epithelial cells. The pathologic report was acute inflammation of the kidney with abscess formation.

The patient was last seen in 1910 (four years after operation). At that time she was well, had gained in weight and considered her general condition better than it had been for years.

Case 5.—Boy, aged 17. Past history negative except severe tonsillitis seven days ago. Abdominal symptoms suggesting the peritonitis sometimes associated with tonsillitis appeared three days before patient was seen by me (Sept. 10, 1911). At that time the patient was acutely ill; temperature 103, pulse 110. White count 22,000. The tonsils were still acutely inflamed. There was tenderness over the whole abdomen and spasm on the right side. There was tenderness in the costovertebral space on the right. Urine 1.024, high, a large trace of albumin; a small amount of sediment, consisting of blood, large and small round cells and a few pus cells and granular casts. While the patient had been severely ill with tonsillitis from the onset, the attending physician believed the patient to be much more toxic since the onset of the abdominal symptoms. The patient was in a critical condition and it was believed that the right kidney had become acutely infected.

The right kidney was exposed through the loin. The perirenal fat was edematous. The kidney was enlarged about one-third over normal, and scattered over its surface were numerous foci of suppuration from 2 to 5 mm. in diameter. The kidney pedicle was clamped and tied, and the kidney removed. The wound was closed with drainage.

The pathologic diagnosis was acute inflammation of the kidney with abscess formation. The *Staphylococcus albus* and the *Streptococcus pyogenes* were found.

There was considerable improvement in the patient's condition during the following twenty-four hours, but he remained critically ill for ten days, when the temperature then reached normal. At this time the tonsillitis had subsided and the patient made a slow but uneventful recovery. Two years and six months after operation the patient was in excellent condition.

The *clinical picture produced by a diffuse inflammatory process within the kidney without abscess formation* differs from that with abscess formation chiefly in the severity of the symptoms and is the type of the disease most usually due to *Bacillus coli* infection and most difficult to distinguish from an ascending infection. The onset may be sudden, as in the former type, with acceleration of the pulse rate; and a leukocytosis is always present, often high. A chill may accompany the onset. Pain in the loin on the affected side is an early symptom, sometimes indefinite but often severe, varying according to the severity of the process. Tenderness over the kidney in the costovertebral angle, with some muscular rigidity and abdominal tenderness and rigidity on the affected side, is a constant sign. The chief feature differentiating this form of the disease from that of abscess formation is the lesser degree of progressive toxemia and the presence of more abnormal elements in the urine. These patients, while acutely ill, do not have the very severe and rapidly progressive toxic course which characterizes the other form of the disease. The illness after the first few days following the onset remains more or less stationary and may continue not unlike a beginning typhoid fever. The pain, tenderness and muscle rigidity may become gradually more pronounced, and the temperature, pulse and leukocytosis elevated, or the different signs may gradually decline. Remissions in the acute symptoms occur, but indefinite pain on the affected side usually persists indefinitely, and recurrences of the acute symptoms are not uncommon. The following cases are illustrative of this type of the disease:

Case 6.—Woman, aged 24, gave a history of syphilis four years ago. Treated with mercury continuously for three years. Jan. 7, 1910, laparotomy was performed by another surgeon because of severe pain on the right side of the abdomen, associated with spasm and tenderness over the right rectus muscle. At this time the temperature was 102.5. A few small cysts of the right ovary and a normal appendix were removed. A thorough exploration of the remaining abdominal organs proved negative. Following operation the pain in the right side persisted, the temperature ranged between 101 and 104, and the pulse around 120. The white count was 14,000. This condition persisted for about one week, when the temperature returned to normal, the pulse to 100, and the tenderness became much less.

One week later the pain again became severe, the temperature rose to 102, and the right side of the abdomen and back became very tender. Examination showed marked tenderness and involuntary spasm over the right side of the abdomen and back. White count was 23,000. The patient remained in this condition for about one week, when symptoms gradually subsided. The urine at this time showed but a trace of albumin, a small amount of pus, single and in clumps. A few small round cells and granular casts.

Two weeks later another acute attack of pain on the right side. Temperature rose to 102, pulse to 120. The twenty-four hour amount of urine at this time was 550 c.c. The sediment showed more pus, many small, round epithelial cells and a few hyaline and granular casts. Roentgen-ray examination was negative.

I first saw the patient in this attack. At this time there was general abdominal tenderness and spasm more marked over the right side. There was exquisite tenderness and spasm in the right costovertebral space. The general condition was only fair. The patient looked septic. The diagnosis of acute inflammation of the kidney was entertained.

An anterior incision was made, the peritoneum opened, the abdomen explored and found to be negative. The anterior incision was closed. The kidney was then approached through the loin. The perirenal fat was found adherent to the kidney and a hard nodule about the size of a Concord grape situated in the perirenal fat was removed. The kidney was slightly larger than normal and showed many red areas beneath the capsule. On section of the organ, similar areas were found scattered through the kidney substance. Nephrectomy was performed, the pedicle tied and the wound drained.

Four days following the nephrectomy the patient developed a right lobar pneumonia which a few days later involved the left side, and death occurred eleven days after operation. The wound at this time had healed except for a small granulating area.

The pathologic report showed acute inflammation of the kidney, with several areas showing connective tissue repair. The *Bacillus coli* was recovered from the tissues.

Case 7.—Man, aged 31, seen in consultation with Dr. Richard Collins at the Waltham Hospital, Jan. 25, 1910, since childhood has had a chronic discharge from the right ear. About ten years ago he had a severe attack of pain in the right kidney region, the facts regarding which are indefinite. Five years ago he had a similar attack and passed a small amount of blood in urine. He was confined to the bed for a short time. Four years ago he had a similar attack associated with fever, and frequent urination, and passed small amounts of blood in the urine several times.

Five days ago, after a hearty dinner, patient had a severe attack of pain in right side, associated with a chill and vomiting. He was then admitted to the Waltham Hospital, acutely ill, with pain on right side, temperature 102, pulse 104.

Acute symptoms gradually subsided, but pain in the back persisted. Roentgen-ray examination was negative. He was seen by me, Feb. 25, 1910. The patient's condition was as noted above. A cystoscopy performed at this time showed the bladder urine to be slightly cloudy and containing shreds. This urine was 1.020 in specific gravity, acid, and the sediment showed considerable pus, small round and many squamous epithelial cells. There was considerable fresh blood. Trigon was normal. Both ureteral orifices were normal in size and character. About ¾ inch above the right ureteral orifice was seen a group of eight or ten acutely injected areas from which bleeding had taken place and on which were adherent blood-clots. These areas were a little larger than a pin, and resembled early tuberculosis of the bladder. The remainder of the bladder was normal. Both ureters were catheterized. The urine collected from the two was equal in amount. The examination of the urine from the left side showed little abnormal; from the right side considerable pus and normal blood-cells; a few caudate and small round cells. Guinea-pigs inoculated for tuberculosis did not develop the disease.

Jan. 29, 1910, an exploratory examination of the kidney was made on account of the persistent pain and cystoscopic findings. The kidney was exposed through the loin. The perirenal fat was but slightly adherent to the kidney. Kidney was delivered and found slightly larger than normal. Beneath the capsules were seen a few grayish-white, contracted areas and a few acutely red areas. There was nothing abnormal in the remainder of the kidney or kidney pelvis. The kidney was split in Brödel's line. There were two acutely reddened areas in the upper half of the kidney. Believing the persistent pain to be due to these contracted areas, the kidney was removed, the pedicle tied and the wound drained.

The temperature, which was 101.5 at the time of operation, dropped to normal within twenty-four hours. The wound healed by first intention.

The pathologic report was an acute, diffuse inflammation of the kidney, with healed areas. The colon bacillus and *Staphylococcus pyogenes aureus* were recovered from the tissues. When last heard of, about one year following operation, the patient was reported to be well.

Case 8.—Woman, aged 43, seen in consultation with Dr. H. W. Barker and Dr. A. W. Tucker of Lynn; thirteen years ago had a severe illness, characterized by pain in the right side of abdomen and back, fever, chills and cloudy urine. She was in bed for several weeks. Since that time she had several similar attacks which confined her to bed for from two weeks to three months. The different physicians who have cared for her have considered that in these attacks she was suffering from "peritonitis." Some advised operation, which the patient refused. Between these attacks there has been a constant pain, varying in severity, in the left kidney region. Several Roentgen examinations have shown nothing abnormal. Four years ago the patient had a small amount of blood in the urine during one of these attacks. This occurred again two years ago. It never lasted more than a few days.

Feb. 2, 1912, the patient was cystoscoped by Dr. H. W. Baker and a collargol injection and roentgenogram were made of the left kidney. The cystoscopy showed the bladder to be normal in all respects, both ureteral orifices were normal, and the catheters were passed to each kidney. The specimen of urine collected showed that from the right side to be normal, and that from the left to contain a few leukocytes, normal red cells, and caudate epithelial cells. The capacity of the renal pelvis was 14 c.c. The roentgenogram of the injected kidney pelvis showed it to be normal. No shadow appeared in the control plate.

Feb. 14, 1912, I again cystoscoped the patient, and found the condition as previously stated. An injection of 6 mg. of phenolsulphonephthalein showed the dye to appear on the right side in six minutes; left in nine minutes. The total amount recovered in two hours was: right 25 per cent., left 10 per cent. On account of the persistent pain an exploratory examination of the kidney was undertaken. Temperature at the time of operation was 102.2, pulse 100, leukocytosis 8,100. The operation was performed Feb. 16, 1912. An anterior incision was made. The peritoneal cavity was opened and explored. Nothing abnormal was found. The peritoneum was closed and stripped toward the median line, exposing the left kidney retroperitoneally. The kidney was but little larger than normal, and several grayish depressed areas were seen beneath the capsules. On section there were many pale grayish, sclerotic areas, some near the cortex, others in the pyramid. The remainder of the kidney was reddish yellow, and there were acute red streaks near the apices of the pyramids.

In view of the history these sclerotic areas were considered to be old resolved foci of acute inflammation. It was believed that the persistent pain following the acute attack was probably to be explained by these areas, and the kidney was therefore removed. The fat about the pedicle was adherent to the vessels, and as they could not be cleaned the pedicle was clamped and the wound closed about the clamp, which was removed on the fourth day. The patient made an uneventful recovery except for an infection which took place in the wound.

Pathologic report is as follows: The surface presents several opaque, grayish areas which are depressed and contracted. Some of these areas are surrounded by a small area of injection, irregular in outline. On section several similar but smaller opaque areas not surrounded by areas of injection are seen scattered throughout the kidney substance. Near the upper pole is seen an area 2 cm. in diameter, symmetrical and definite in outline, containing another area which is apparently a blood-clot. The capsule of the kidney strips easily, leaving a red surface in places. Cortex measures 6 mm., and glomeruli are distinct. Histologic diagnosis is acute, diffuse inflammation of the kidney, with healed areas.

Three months after operation the patient was in the best health which she had enjoyed for many years. She had gained 34 pounds in weight. Eight months after operation excellent health continues. Two years and four months after operation the patient is in excellent condition.

Case 9.—Woman, aged 48, seen in consultation with Dr. H. Baker, March 2, 1912, presents a history of having had repeated attacks of pain in the left kidney region, associated with fever, chills and vomiting. These attacks confined her to bed for periods of weeks many times during the past five years. Since the first attack there has been constant pain in the left kidney region and during the past year the patient has been unable to lie down in bed and has been obliged to sleep sitting up on pillows. March 1, 1912, the patient was cystoscoped by Dr. Baker. The bladder was found to be normal. Both kidneys were cauterized. The urine obtained from the right side was acutely red and showed fresh blood, with a few squamous and large round cells. The fresh blood was believed to have been caused by the catheter. The urine of the left side was slightly cloudy and showed a few pus cells, single and in clumps, many squamous, polygonal and large round cells, many clumped with fat drops adherent.

The patient was seen by me, March 4, 1912. She was a poorly nourished woman, weighing 110 pounds, and complained of severe pain in the left kidney region. There was tenderness in the left costovertebral angle. The temperature was 99.4 and the pulse 108. As a result of the consultation it was decided that an exploratory operation of the kidney should be made.

March 10, 1912, the kidney was approached through an anterior incision, the peritoneal cavity opened and explored. Nothing abnormal was found. The peritoneal wound was closed and stripped toward the median line, exposing the kidney. The perirenal fat was slightly adherent to the kidney. This was freed and the kidney delivered. The organ was of normal size and rather pale. It was split in Brödel's line. The cut surface showed the tissue everywhere to be paler and firmer than normal, and there were no focal changes in the kidney tissue and the structure of the kidney was normal, other than for its pale character. It was decided not to remove the organ. The capsule was stripped, the kidney fixed in position, and the wound entirely closed.

The patient made an uneventful recovery. The wound healed by first intention, and two months following operation there is but slight pain of the old character, which has continued to come only after unusual exertion. The urine still contains polygonal and large round cells with a small amount of fat. Six months after operation the old pain had entirely disappeared and the urine contained but a few squamous epithelial cells.

It is believed that the pathologic process present in this kidney was a connective tissue repair of a diffuse inflammation involving the whole kidney. The kidney was left in this patient as more or less of an experiment.

This patient has had much relief, yet there is pain of varying degree in the region of the affected kidney, most distressing when fatigued, or when the urine becomes much concentrated. The pain may be considered annoying rather than severe. The patient considers herself much benefited but not cured by the operation. The urine examined many times shows renal cells and occasional granular casts; a small but variable number of leukocytes and sometimes fat globules. Her present symptoms do not warrant nephrectomy.

Case 10.—Woman, aged 55, was operated on twelve years ago for carcinoma of the breast. Eleven years ago she had an attack of lobar pneumonia. She was admitted to the Long Island Hospital Feb. 19, 1914, complaining of pain in the pelvis with bloody discharge from vagina. Physical examination revealed the following defects: A diastolic murmur was heard at apex; not transmitted. Vaginal examination suggested carcinoma of the cervix, and a histologic examination of the tissue proved it to be carcinoma.

April 30, 1914, I performed an abdominal hysterectomy from which the patient made an uneventful recovery.

May 20, 1914, the patient's temperature rose to 102, white count 14,000. Urine showed the slightest possible trace of albumin, a few squamous large and small round cells and a few leukocytes. The patient continued to run a high temperature and pulse; became extremely sick and eight days after the onset when seen by me the urine had become cloudy with considerable pus. There was tenderness and spasm over the whole right side of the abdomen and the right kidney could be felt considerably enlarged and extremely tender in front and in the costovertebral angle. Temperature 102, pulse 120, respiration 30. The kidney was exposed through the loin; the perirenal fat was extremely edematous; the kidney was considerably enlarged and of a bluish tint. Organ incised; surface acutely reddened throughout, otherwise negative. A rubber drainage tube was placed into the kidney pelvis and the cut surface closed about it. The external wound was closed about the drainage tube. The *B. coli* was recovered from the kidney incision and from the urine. The temperature dropped to normal within thirty-six hours and the patient's condition now, two weeks after operation, is satisfactory in every way.

Case 11.—Boy, aged 19, referred by Dr. George Muttart, had negative past history, except that he had symptoms of acute appendicitis for three days. Appendectomy was performed by me July 23, 1912. Free cloudy fluid was found in the abdomen and pelvis, considerable in amount. Abdomen and pelvis were drained. Patient made an uneventful recovery; wound healed on eighteenth day; on twentieth day following operation, the patient had a rise of temperature to 102 associated with a chill. The temperature continued to range between 101 and 103 for five days without other subjective signs except that there was indefinite pain in the right kidney region.

On the sixth day after onset of these symptoms there was marked tenderness in the right costovertebral angle and rigidity of the right rectus muscle. The urine for the first time became slightly cloudy and contained a trace of albumin and some blood and pus. A cystoscopic examination showed the bladder to be normal. The urine from the left kidney was normal, that from the right slightly cloudy, containing pus, blood and the colon bacillus. The patient was becoming progressively sicker, temperature 103, pulse 110.

The right kidney was exposed through the loin. The perirenal fat was filled with a cloudy serum, the kidney much enlarged and congested and beneath the capsule were seen many irregular areas of acute congestion. The kidney was split and these areas were found to be scattered through the kidney substances. A drainage tube was passed through the kidney into its pelvis and the kidney closed about the tube by mattress sutures. The external wound was closed about the drainage tube. The patient's temperature dropped to normal on the third day and the abnormal elements gradually disappeared from the urine. The patient is well almost two years following the operation.

During the past ten years I have seen seven patients in whom all signs pointed to a diffuse acute unilateral inflammatory process of the kidney, and in whom the symptoms subsided without operation. In four of these cases the colon bacillus was isolated from the affected kidney by means of the ureter catheter. The only sign of the disease remaining in these cases has been an indefinite pain in the region of the affected organ. In but one of these patients is this constant and in the others it may be considered absent, or present only during periods of fatigue. The urine in all shows but little abnormal. This type is illustrated by the following case, which is typical of this group:

Case 12.—Woman, aged 23, seen in consultation with Dr. A. L. Stavely and Dr. F. R. Hagner at Washington, D. C. Jan. 14, 1914, for many months had some indefinite feeling of discomfort in the right side, especially after playing golf, but no importance had been attached to it. January 8 she was seized with a severe pain on the right side of the abdomen, a chill and fever. The suspicion of appendicitis was entertained. When seen by Dr. Stavely her temperature was 102 and there was marked tenderness over the right kidney region associated with mucle spasm. Further examination showed a small amount of pus in the urine, a leukocytosis of 30,000 and the colon bacillus was isolated in culture from the urine. The patient became progressively sicker, the temperature ranging between 100 and 103. A cystoscopic examination by Dr. Hagner showed a distinct reddening of the whole bladder mucosa. The urine from the right ureter showed numerous epithelial cells and a moderate number of pus cells; the urine from the left kidney was normal. The kidney was injected with argyrol as it was thought that the patient might have a pyelitis. The temperature the following day (four days after onset) reached 104. The leukocytosis was 21,000; the polymorphonuclear leukocytes were 84.5 per cent. The patient's general condition was much worse and although the physical side had changed but little, the patient had become progressively more septic and the intoxication became alarming. When seen by me, six days following the onset, the patient's temperature had dropped to normal and the urine contained a considerable amount of pus for the first time. Physical examination was negative except for tenderness over the kidney region, in front and in the back, there being tenderness still existing in the costovertebral angle. The treatment, which had consisted of forced fluids and large doses of hexamethylenamin, were continued. The patient gradually improved and had no remissions of symptoms. At the present time, five months following the illness, the patient is in her usual health, although there is some indefinite discomfort in the right kidney region during fatigue. The urine is negative.

CONCLUSION

In the first class, the single kidney with multiple miliary abscess formation from which malignant toxemia results, the organ must be sacrificed in order to save the patient's life. In the second case of this class, mentioned in this report, only the central quarter of the kidney was involved. While this infected area was completely removed by a resection of the middle third of the kidney, and the healthy upper and lower thirds united successfully and the outcome of the case was most favorable, this procedure must be considered hazardous and cannot be recommended. In the other four cases of this class, here recorded, nephrectomy was performed, and it is felt that in each instance it was the only means which could have saved the patient's life. All these patients are living to-day and are free from symptoms, considering themselves well.

While house surgeon at the Boston City Hospital, I observed two cases of this form of the disease: one in which Dr. Paul Thorndike did a nephrectomy followed by recovery, and one in which Dr. F. S. Watson did a nephrectomy with drainage followed by death from progressive toxemia.

The proper treatment in the second class, the type of diffuse acute, unilateral inflammation of the kidney, cannot be so clearly defined and must depend on the course of the disease in the individual case. As a broad rule, it is felt that palliation, forcing fluids and the employment of urinary antiseptics, fortifying the patient's strength by a nutritious diet and stimulating drugs, should be instituted at the outset, and operative interference should only be undertaken when the symptoms and physical signs give evidence of progression to the point of seriously lowering the general resistance by toxic absorption. The time to operate in this class of cases requires experience with the disease and judgment in regard to the patient's general condition. Some of these patients recover without operation, as noted by Brewer, Cobb and others, and in the seven cases mentioned in this report.

When an operation is undertaken in this class, nephrectomy is not the only procedure to be employed. Favorable results have been obtained by simple decapsulation,[1] by puncture of the infected areas with drainage[2] and by splitting the kidney, closing the kidney wound by suture and decapsulating the organ or decapsulation and drainage of the kidney pelvis as in cases of this class recorded in this report.

On the other hand, when the symptoms and signs are of a distressing nature and the affected kidney is found to be the seat of old as well as new inflammatory processes or when the acute process is extensive, as in some of the cases of this report, nephrectomy is the best procedure.

46 Gloucester Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAC GOWAN AND CUNNINGHAM

Dr. Hugh Cabot, Boston: The distinction between the hematogenous and the lymphatic types of infection is of importance, and I believe it cannot be made from symptoms. From the symptoms alone we are likely to regard as hematogenous cases which are, in fact, lymphatic. The distinction has been made clearer to me by Dr. Cunningham's paper, and it turns sharply on the condition of the urine. I believe that, in practically all the cases in which there is evidence of a previous infection in the urinary tract, the infection of the kidney is lymphatic in origin. Mallory's work has shown that many of these cases of acute kidney infection follow mild cases of chronic pyelitis which have been entirely overlooked. In going over my records of cases of acute kidney infections I have been surprised to find how many gave a history of pyelitis, even many years ago, and some of these acute kidney conditions have originated in a pyelitis of childhood and are lymphatic in origin. The symptoms in Dr. Cunningham's cases are entirely out of proportion to the condition of the urine, because the condition is practically a closed one. It has little or no access to the tubules, and the urine does not show the extent of the damage. On the other hand, in the lymphatic cases secondary to a process in the pelvis, the condition of the urine follows quite accurately the symptoms. The cases that show very little change in the urine with marked general symptoms are likely to prove hematogenous, while the cases that give few symptoms and marked changes in the urine are of the lymphatic type. I was pleased to hear Dr. Cunningham lay great stress, in the treatment of these cases, on the desirability of great caution in the practice of nephrectomy. Modern surgery has shown that amputation, whether of an extremity or of a kidney, is an admission of weakness. Many kidneys have been taken out for conditions which would have recovered with a damaged kidney, but one far better than none. That does not apply to tuberculosis, but I am dealing only with infections from other causes. We should retain these kidneys to the last moment, and resort to nephrectomy only when the patient will die without it. In a considerable number of cases I have operated with the belief that I should be obliged to do a nephrectomy, and instead, have done some minor procedure, generally nephrotomy and occasionally decapsulation, with good results, though always with a damaged kidney. I do not believe that the majority of those cases are hematogenous. It has long been impossible to explain the lesions. They occur, as a rule, not in the glomeruli, but at the base of the pyramids in one group, and close to the pelvis in the other.

Dr. B. C. Corbus, Chicago: The work of Debré and Paraf, to which Dr. MacGowan made reference in his paper, consists in reversing the Wassermann reaction. We all know the difficulty of making a diagnosis in renal tuberculosis, both by looking for the bacilli in the urine and by guinea-pig inoculation. An animal is sensitized to the tubercle bacillus by injections of tuberculin, so that this animal contains specific antibodies for the tubercle bacillus. This "tubercle amboceptor" is used as an index, and the patient's urine contains the antigen. In the Wassermann an antigen looks for an unknown antibody. In the work of Debré and Paraf an antibody looks for an unknown antigen. The technic is simple. I have been working at it for a year, but failed until I could get a good antibody. One cannot get it from a tuberculous patient because his serum often contains both the antigen and antibody. If an animal is sensitized by injecting it with bovine tubercle bacilli you can get this specific antibody, and it is no trick at all to hook this back to the antigen in the urine. I have tried it in a few cases, but they are limited on account of the lack of material; but I hope later to have the pleasure of presenting this technic more fully.

Dr. M. Krotoszyner, San Francisco: Regarding Dr. MacGowan's statement that the cystoscopic evidence in renal tuberculosis is invariably to be found at or around the ureteral opening of the affected side, I recall a case of a tuberculous kidney in a woman of 42, in whom the cystoscopic findings were entirely negative. On account of this and the persistent absence of tubercle bacilli in the urine sediment, the diagnosis of tuberculosis, which was strongly suspected, was abandoned and the kidney was exposed without the application of the guinea-pig test, which was, in all probability, the only clew to a correct preoperative diagnosis. Two foci of tuberculous caseation were afterward found in the removed kidney.

Dr. J. H. Cunningham, Jr., Boston: With regard to Dr. MacGowan's remarks on tuberculosis and the clear summarization of them by Dr. Cabot, there is much of interest. The fact that we have never as yet seen a healed tuberculous process in a kidney that can be proved to be such is of primary importance. The lymphatic infection of the kidney, spoken of by Dr. Cabot, is interesting and I believe our attitude with regard to the manner in which the tuberculous process is disseminated in the kidney should be somewhat changed. What seems to be neglected, in considering infections within the kidney, is the fact that the kidney is an organ which may disseminate disease through itself by the channels already existing. We may have a single focus develop in a kidney as a hemic or ascending infection, and from that single focus other parts of the organ may be infected by the kidney channels. The cases which form the basis of my paper are examples of this sequence of events. I believe we have too often considered multiple lesions in a kidney to be simultaneous in this organ when, in reality, there was a primary renal focus from which other parts of the organ had become infected through the lymphatics, blood-vessels or the spaces in the connective tissue stroma.

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[1] Cotton: Ann. Surg., November, 1911.
[2] Brewer: Tr. Am. Surg. Assn., 1908, xxvi.

Dr. Granville MacGowan, Los Angeles: In this connection I will report a recent most interesting case. A man of 50, with pyuria, had had repeated attacks of left-side renal colic and had passed, at different times, a number of small stones after such attacks. Their frequency and severity had invalided him. A roentgenogram showed two large stones in the left lower pole. I catheterized both ureters, and obtained a macroscopically clear urine, which contained only a little albumin and a few red blood-cells. The phthalein test for functional capacity of the left kidney was better than that of its fellow; they were both normal. The patient had a large tumor in the left flank. I could satisfactorily explain this only by surmising the existence of two ureters on the left side leading to a double kidney, and that I had overlooked one. Following an atrocious attack I cut down on this kidney and found a perinephritis which was like a wasp's nest or honeycomb. The fatty capsule of the kidney was adherent to everything about it and so intimately to the muscles along the spine and the descending colon that they had to be dissected directly from it. The kidney itself was a sound organ lying in the midst of this undrainable surrounding tissue. There was no stone; the shadows had been cast by two cavities filled with granulation tissue, pus and débris which lay in the lower part of this mass and communicated with the ureter. The agent of infection was the *Staphylococcus aureus.* The kidney was removed inside its capsule, and the multiple abscess cavities were dissected off the healthy tissue *en masse.* The side had been injured two years previously by a blow from the crank of the patient's automobile. After the operation he was nauseated for days, and there was much pus in the urine for four days. On the ninth day, after a chill with a rise of temperature to 105 F., followed by anuria, on examining the right flank I found a tumor which proved to be a displaced kidney, probably dislocated by the retching following the first operation, causing a kink in the ureter. The kidney was exposed, delivered and decapsulated after pylorectomy to relieve pressure. Underneath the capsule of that kidney were hundreds of small miliary abscesses. The kidney presented by Dr. Cunningham reminds me of it. There was no abscess large enough to cut into and drain. The urine, which at the time of the preliminary examination had been normal, had during that nine days become infected. After decapsulation the kidney was suspended and drained for three days through the pelvis. At that time the patient's urine was perfectly clear, it contained no tube casts and no microscopic evidence of pus. I do not know, however, what the outcome will be.

Compiling Hospital Morbidity Statistics.—Bolduan has suggested a plan for compiling hospital morbidity statistics in this country. The method is especially applicable to the hospitals of a large city, but might be used for the hospitals of an entire state and is capable of being made nation wide in scope. The essential feature of the plan is the filling out of "discharge certificates," analogous to ordinary death certificates, on the discharge of each patient from a hospital. These discharge certificates are then sent to a central filing bureau, preferably the health department, and there classified and analyzed.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914.

AUTOGENOUS VACCINES IN TREATMENT OF SCIATICA

FRED. C. ZAPFFE, M.D.
CHICAGO

A man, aged 32, commercial traveler, consulted me because of an attack of sciatica (left-sided) which had continued practically unabated in the severity of the pain for eight months. During this time the patient had been under the continuous care of a number of physicians, but without more than slight temporary relief. He was kept from his work during all of this time, and, incidentally, lost not only time, but 60 pounds in weight. He was treated medicinally; the spinal nerve roots were injected with alcohol; he was given gonococcus vaccine; placed in a plaster-of-Paris cast; Buck's extension was applied to the leg; the Paquelin cautery was applied to the skin from spine to heel over the entire course of the sciatic nerve.

From these procedures he received only temporary relief. When I first saw him he was hardly able to walk because of the pain, nor could he lie down with comfort. He was in constant misery.

The history shows that he had an attack of gonorrhea six weeks before the sciatica began, and that about ten days after his doctor told him he was cured of his gonorrhea, he felt the first pain in the nerve. The clinical picture thereafter was characteristic of sciatica. There was no question about the correctness of the diagnosis. There was no evidence of a gonococcus metastasis elsewhere in the body.

Examination failed to find any pathologic condition except pain on pressure over the left sacral foramina. The spine could be put through the full range of motion, even violent motion, bending and rotating, without causing pain. Hip-joint disease was eliminated. Examination of the prostate gave negative findings. The teeth and gums were examined carefully and thoroughly by the patient's dentist. In short, there was no physical evidence of the cause of the sciatica, and yet when I took the temperature reading it was 99.6 F. at 8 p. m.

The examination was continued systematically. A Wassermann test was made, with negative results. The tuberculin test was also negative. The chemical examination was likewise negative. Roentgenograms were made of the spine from top to bottom, and of both hips and the pelvis. Very careful examination failed to disclose any evidence of anomaly or disease.

A clue as to the possible nature of the trouble was obtained from the temperature record. The curve was very erratic, the temperature ranging between 98 and 99.8 F., without any relationship to the time of day. The two-hour record was kept for a week and on not one day was the temperature normal throughout the day. The tuberculin test did not influence the curve in any way.

A bacteriologic examination of the urine was now made, and staphylococci and a diphtheroid bacillus were found. A culture of these organisms was taken and a vaccine was made. It was a mixed autogenous vaccine.

The first injection (hypodermically) of vaccine consisted of 100,000 bacteria. It produced a typical reaction. The patient felt slight chilly sensations; the temperature rose to 100.2 F., and the pain in the leg was somewhat increased in severity. The reaction subsided in twenty-four hours. Four days later the second injection was given. It consisted of 250,000 bacteria. Again only a slight reaction was obtained. The third injection of 500,000 bacteria, given four days after the second, produced a very slight reaction, but the fourth injection of 1,000,000 caused a decided reaction, far more marked than the first. Three more injections of 1,000,000 each were given, the reaction being slight after the first, and absent after the last two injections.

During the vaccine treatment the patient was encouraged to be outdoors, except for the first twenty-four hours after each injection; to eat well; to take some carefully prescribed exercise, and to observe personal hygiene thoroughly. He was given no medicine except magnesium citrate. The pain in the leg rapidly eased up and after the fourth injection ceased entirely and has not returned since. Eight months have now elapsed since the treatment was stopped. The patient has regained his normal weight, feels well, and is able to do all his work in perfect comfort.

The vaccine treatment of sciatica has not received the attention it deserves. Little is said about it in text-books, and only gonococcus vaccine is mentioned. Greeley[1] cites one case treated successfully with a vaccine made from a throat coccus. He gave only three injections — 100 million, 200 million and 400 million, respectively, with a final precautionary dose of 800 million. This is the only citation of its kind which I have been able to find in the literature. If there are other reports, they have escaped me.

These cases open up a wide field for vaccine therapy, but in order to follow it out intelligently one must be versed in the whole subject of vaccine therapy. The cases must be selected carefully and the treatment must be given with good judgment.

All the phases of vaccine therapy have been discussed almost, one might say, *ad nauseum,* and yet the subject is but little understood; in fact, it is greatly misunderstood. That it has a definite place in therapy no one will deny, nor that it has its limitations, largely, however, growing out of lack of discrimination and error in judgment in the selection of suitable cases. The case, the dose, the reaction, the time of administration and the duration of the treatment must receive careful and *individual* attention. There is no rule of thumb. The mere fact that it is now generally recognized that there exist strains of bacteria and that these strains differ from one another emphasizes the necessity that only from an autogenous vaccine can one expect to receive any favorable results. Stock vaccines are a "hit or miss" proposition — more often "miss" than "hit."

The source of the infection, that is, the infection focus, must be determined, and usually can be found by patient, persistent search. It may be elusive, but it exists. And when found, a vaccine is easily obtained.

Cases not amenable to vaccine therapy will yield negative results; therefore, every other possible source of the sciatic pain should be investigated thoroughly before vaccine therapy is tried, and then the same principles which make for success in this form of treatment in general hold good here.

This case is reported solely to call attention to one source from which a sciatica may take its origin.

Clarifying Culture Mediums.—Filtering culture mediums containing agar-agar has always been more or less responsible for breaking the Second Commandment in all laboratories. The laboratory supplied with a heavy centrifuge equipped with an interchangeable head, fitted with large trunnion cups and carrying 250-c.c. or 500-c.c. tubes or bottles, will find in this machine the solution to the troublesome question of filtering agar. In our own practice we use 250-c.c. bottles. In the case of ordinary nutrient agar, we centrifuge the hot agar-agar solution before mixing with the beef juice to remove all suspended, insoluble foreign matter. After adding the beef juice and heating, the whole is again centrifuged for two or three minutes, which separates the coagulate completely, leaving a finished product that requires no further clarifying. Precipitates that form on subsequent sterilizations are quickly and completely removed in this way. Even with other mediums that readily pass through paper, considerable time is saved by the use of the centrifuge.—W. F. Thomson, M.D., City Bacteriologist, Beaumont, Texas.

New Instruments and Suggestions

A LATERAL PRESSURE SPLINT FOR FRACTURED NECK OF THE FEMUR

George Chandler, M.D., F.A.C.S., Kingston, N. Y.

The need of a simple method of applying an old principle in the treatment of fractured neck of the femur is the reason for presenting a splint which is particularly valuable for use in the outlying districts of small cities distant from big surgical centers.

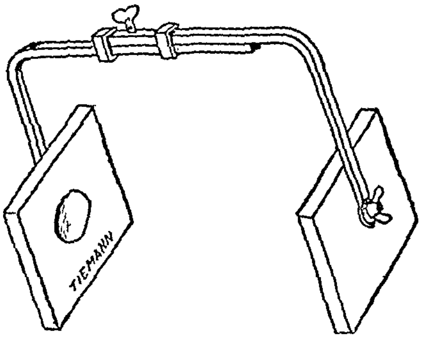
A surgeon practicing in a small town is frequently called into the country for a case of this kind and is confronted with the problem of giving his patient a satisfactory method of treatment without the appliances which a larger city affords.

In cities where assistants are at hand, large hospitals are convenient, and Roentgen-ray specialists can be secured, the abduction method maintained by a plaster-of-Paris splint, as advocated by Dr. Royal Whitman, is, of course, the ideal one.

A proper application of plaster of Paris, however, necessitates three or four assistants and an apparatus. This is obviously impossible in small communities.

Nor are the services of a trained nurse always available, on account of limited means, and it is conceded that, without proper watching, plaster of Paris is liable to produce pressure symptoms and other lesions in the aged, among whom this fracture more commonly occurs.

The method here described makes use of traction, abduction and lateral pressure, which are the principles of the plaster-of-Paris method, but embodied in a form that needs no skilled watching and can be applied by a surgeon unassisted. The method is as follows:



The author's lateral pressure splint for fractured neck of femur.

The patient is put to bed and a Buck's extension is applied as usual, the only difference being that the pulley at the foot of the bed is at the corner, and the patient's body is kept from the pulley side of the bed by sand-bags or bricks wrapped in flannel. By this means the leg is pulled obliquely away from the body, producing continuous abduction the same as in the Whitman method. After two or three days, when the muscles become sufficiently relaxed to overcome the shortening and to allow the fragments to be in apposition, the lateral pressure splint is applied.

The illustration shows it to be nothing more than a vise consisting of two boards connected by a sliding bar which is held in position by a thumb-screw. The boards are well padded and rest on either side of the hips grasping each trochanter, the adjustable bar being above and across the patient's pubes.

To adjust the splint, a hand is placed on either board and a gentle pressure exerted to press the boards against the trochanters. With the thumb screw loose, the sliding bars slip by each other and when the pressure is sufficient, a turning of the screw will maintain it and hold the splint solid.

The leg is at the same time held in a position which corrects the eversion of the foot, keeping it in its proper plane.

The cross-bar also serves to keep the bed-clothing from touching the patient and the splint gives him a sense of security. By reason of its firm grip, the use of the bed-pan is facilitated, as the patient can be rolled toward the uninjured hip without fear of displacement of the fragments.

Another advantage for the comfort of the patient is that the back can be easily bathed and rubbed, thus avoiding bedsores.

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[1] Greeley: H.: New York State Jour. Med., April, 1914.

In impacted fracture the Buck's extension is not necessary, for obvious reasons, but the splint is of particular advantage in these cases, as it keeps the impaction from separating while healing is in progress.

During the past few years, I have used this splint successfully in fourteen cases, ages varying from 52 to 76 years, and have received reports from several other physicians who have had gratifying results from its use.

True, the diagnosis in these cases has been purely clinical and there have been no roentgenograms, but these cases had all the classical symptoms and were without doubt true fractures.

The patients, without exception, recovered and walked with remarkably little functional disturbance.

The simplicity, practicability and ease of adjustment of this splint make it an ideal method of treatment in communities where more elaborate appliances are not avilable.

AN APPARATUS TO ASSIST IN THE APPLICATION OF DRESSINGS ABOUT THE HIP*

H. W. Meyerding, M.D., Rochester, Minn.

In applying dressings, especially of plaster of Paris, in the region of the hip joint, a rest is needed which will add to the patient's comfort, allow sufficient working space, give a feeling of security during traction, permit easy removal and leave a well-fitting cast.

Patients not infrequently complain more of pain during and following the application of a cast than of the disease which required its application. Orthopedic surgeons find plaster a serviceable dressing because they have learned through experience to guard against the pitfalls attending its use. Sores due to pressure may be avoided by padding and smoothness of the area of contact. The sacrum is one of the most common sites of such sores, mainly the result of flat, ill-fitting appliances which leave irregular irritating areas supporting the weight of the body.

In order to insure perfect contact and avoid pressure-pain, the support should conform to the lumbosacral curve and allow as large a weight-bearing area as possible. Since a bone plate or graft may be loosened during the application of a cast, ease of application and removal are also important. An apparatus that will allow a certain amount of traction without slipping is also essential.

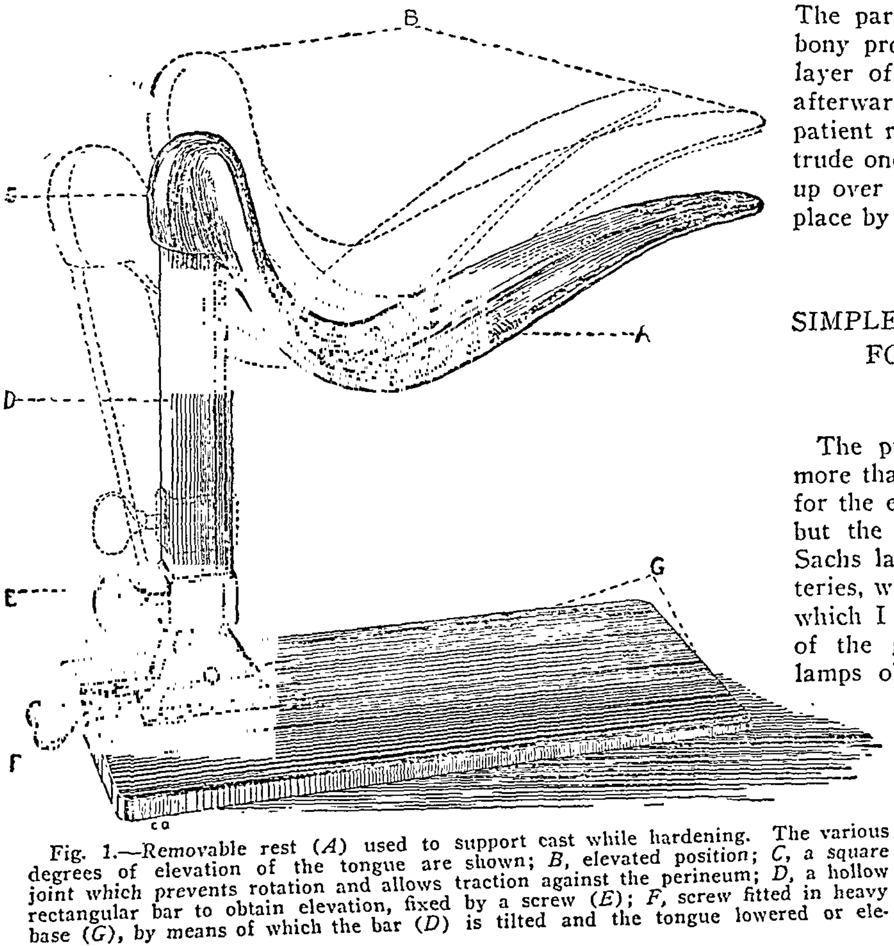

Fig. 1.—Removable rest (*A*) used to support cast while hardening. The various degrees of elevation of the tongue are shown; *B*, elevated position; *C*, a square joint which prevents rotation and allows traction against the perineum; *D*, a hollow rectangular bar to obtain elevation, fixed by a screw (*E*); *F*, screw fitted in heavy base (*G*), by means of which the bar (*D*) is tilted and the tongue lowered or elevated.

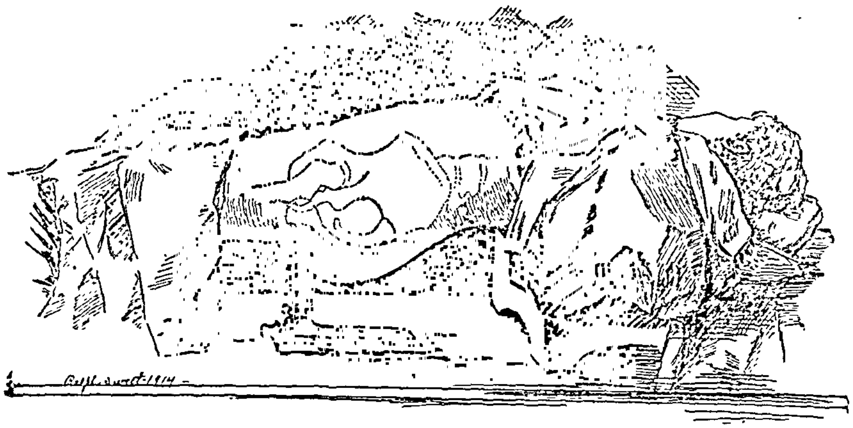

Fig. 2.—Sacral rest in position.

To meet these various requirements, casts of the lumbosacral region were taken of patients of varying ages in the prone position, and a support of average size was designed by me which has been used with satisfaction in the Mayo Clinic for the past three years. The apparatus is removable and can be left under the cast while hardening takes place. It may be lowered or elevated so as to meet varying degrees of tilting, as are found, for example, in ankylosis of the hip, and allows traction against the perineum (Fig. 1).

The patient is placed in position as shown in Figure 2. The parts to be covered are encased in stockinet, and the bony prominences are well padded with felt; then a single layer of flannel in the form of a bandage is applied, and afterward the plaster bandages. Trimming is done with the patient resting on the support, the flannel is allowed to protrude one-half inch beyond the plaster, the stockinet is drawn up over this and the rounded edges of the cast and held in place by a gluten bandage.

SIMPLE ADAPTATION OF POCKET FLASH-LIGHT FOR EAR AND EYE EXAMINATIONS

Ralph A. Fenton, M.D., Portland, Ore.

The principle of transillumination by a glass rod, used more than twenty years ago by Rochon-Duvigneaud of Paris for the eye, and later improved by Würdemann, is not new; but the instruments utilizing this principle (including the Sachs lamp) are all expensive and need special lamps, batteries, wiring, etc. No doubt others have hit on the expedient which I have used now for about four years: the addition of the glass rod to the smallest of the common flash-lamps obtainable.

I take a small hard rubber syringe pipe, cut it off and drill out to fit tight over a piece of 3/16 inch glass stirring rod; cut the latter by nicking with a file to proper length, smooth the ends by melting in a gas or alcohol flame, and set firmly in place with collodion. The completed transilluminator is held in place over the end of the flash-lamp by a simple clip of spring nickeled wire, for example, a common paper-fastener straightened out.

For scleral or mastoid or frontal transillumination, or for throwing a small straight beam into the eye in looking for foreign bodies, testing pupillary reactions, etc., the simple straight tip is best. For use in the ear, the rod should be bent on a radius of about ½ inch, so that it forms rather more than a right angle, say 120 degrees. The upper end of the rod should now be roughly filed into a little hemisphere; melting this smooth gives us a lens tip. Now mount in a syringe pipe as before, and it will be found that the rays travel around with the rod, so that a splendid view of the tympanic membrane may be readily obtained. The advantage of this for bedside work, and the freedom from the necessity of carrying head mirror and hunting up a portable lamp, have made it almost indispensable to me.

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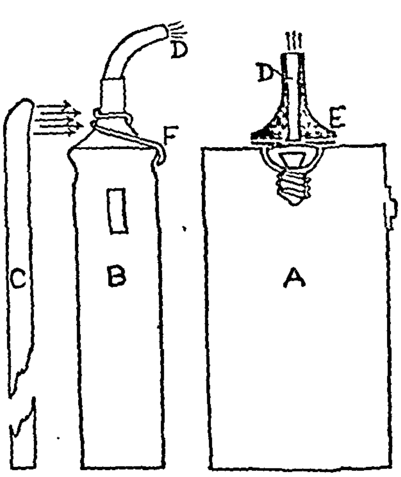
* From the Mayo Clinic.

I also use a long rod acutely bent and then cut so as not to exceed its own diameter, and covered by thin rubber tubing, to carry a strong lateral beam into the nasopharynx. The view through the cocainized other nostril is then very clear. But this, and the fact that I have also adapted an old Marple electric ophthalmoscope to the same battery by using a glass rod of larger diameter to carry the light up to the point usually occupied by a miniature lamp of uncertain behavior, are not such generally applicable uses of this principle. I may say that on account of its portability and small size, as well as the ease of obtaining all the necessary repair parts, this home-made electric ophthalmoscope attracted much favorable comment in a number of clinics abroad and in the East last year.



Small hand battery, 2.7 volt flat top lamp; *A*, side view; *B*, end view; *C*, rod for nose and pharynx examination. *D*, glass rod. *E*, hard rubber syringe pipe. *F*, spring wire clip.

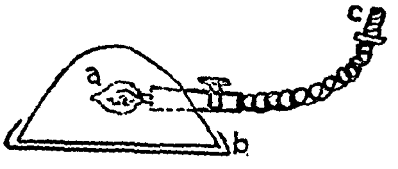
801 Stevens Building.

A CHEAP ELECTRIC HEATER

Edward von Adelung, M.D., Oakland, Cal.

The following device has been used as a substitute for a hot-water bag for over two years, and has proved effective, convenient and cheap.

The outfit consists of a 2-candle-power carbon filament lamp in an ordinary metal scoop-like reflector, with sufficient cord and a plug to connect with a convenient fixture. The reflector is converted into a metal box by a sheet of tin which is cut the proper size to close the open side of the reflector, leaving small ears to be bent over to hold the tin on. To prevent the metal from coming in contact with the skin, the box is slipped into a flannel or cotton bag with a drawstring. The arrangement is made clear by the sketch.



Electric heater; *a*, 2-candle-power lamp; *b*, tin cover, *c*, plug.

A 16-candle-power lamp burning twenty-four hours in this box will not light even paper; therefore with a 2-candle-power lamp there is no danger of fire. Still, such a small lamp yields all the heat that one can stand.

The ease with which one can use it without getting out of bed renders it especially convenient, and gives it an advantage over the rubber bag. It cannot leak. It is not heavy. When placed over cloths rung out of hot water, and the whole covered with flannel, an application is obtained superior to the ordinary poultice, and not requiring renewal.

Any electric house can put the parts together at a cost of not over two dollars. The cost of maintenance is practically nothing.

A CLINICAL METHOD FOR THE QUANTITATIVE ESTIMATION OF SUGAR IN SMALL AMOUNTS OF BLOOD*

Max Kahn, M.D., Ph.D., New York

There are no *clinical* methods for the quantitative estimation of sugar in the blood. The chemical methods that are in vogue are also not specific for glucose. Certain of these methods determine the *reducing* substances in the blood. By the polariscopic method we obtain the total quantity of optically active substances in the circulation. Those methods in which the glucose in the blood is extracted by certain solvents have no clinical value, because the amount of blood necessary for each test is too great.

The test here recommended determines the quantity of "reducing" substance in the blood. It is based on Bang's process. Control tests were made with various known solutions of glucose and accurate quantitative results were obtained. The process is very simple and should require not more than from ten to fifteen minutes for the whole analysis. Two solutions are prepared:

1. Copper Solution: Five hundred gm. of potassium carbonate, 400 gm. of potassium sulphocyanate and 100 gm. of potassium bicarbonate are dissolved in 1,200 c.c. of water, warming if necessary to from 50 to 60 C. (122 to 140 F.), and then cooling to room temperature. One hundred and fifty c.c. of an aqueous solution of 25 gm. crystallized copper sulphate are added. The solution is then made up with water to 2,000 c.c. It keeps indefinitely.

2. Hydroxylamin Solution: Two hundred gm. of potassium sulphocyanate are dissolved in 1,500 c.c. of water and a solution of 6.55 gm. of hydroxylamin sulphate in water added. This is made up with water to 2,000 c.c. This solution also keeps well in a dark-colored bottle. Equal volumes of these two solutions should exactly correspond to each other. The presence of proteins does *not* interfere with this test.

Into a weighing flask from 15 to 25 c.c. of the copper solution from a graduated buret are put, and the flask weighed together with the liquid on a chemical balance. Fifteen drops of the patient's blood (taken from an arm vein or from an ear lobe) are allowed to fall directly into the copper solution in the weighing flask. In experimenting with rabbits it is quite easy to insert a needle of rather large caliber into an ear vein, and thus draw off from 15 to 20 drops of blood, the needle acting like a cannula. The flask is now weighed a second time, and the exact weight of the amount of blood taken for analysis is thus determined.

The blood and the copper solution in the flask are brought to a boil and filtered through a Gooch filter with suction. The coagulum is washed until the washings are perfectly colorless, from 10 to 15 c.c. of water being sufficient for such washing. The washings are united with the filtrate and titrated with the hydroxylamin solution, which is added slowly from a graduate buret until all trace of blue or green disappears from the filtrate. Since 1 c.c. of the hydroxylamin solution exactly decolorizes 1 c.c. of the copper solution, the amount of copper present in excess is thus determined, and the difference between the original amount of copper and the excess represents the copper reduced by the "sugar" in the blood.

With this method a number of determinations of sugar in the blood were carried out. In most instances the results obtained by the foregoing process were higher than the figures given by previous observers. This may be presumably due to less manipulation because of the simplicity of the method.

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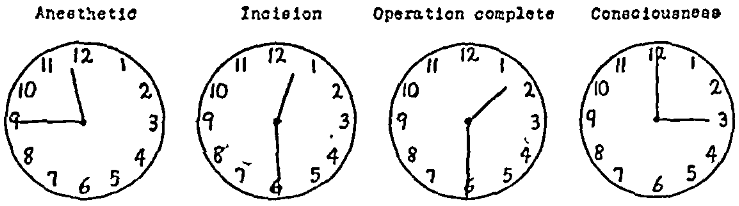
* From the Beth Israel Hospital Chemical Laboratory.

It was found that normal human blood contained from 0.14 to 0.19 per cent. of sugar. The blood of a diabetic patient who had a glycosuria of 2.7 per cent. contained 0.37 per cent. of sugar. Two nephritic patients had 0.21 per cent. (chronic interstitial nephritis) and 0.11 per cent. (acute parenchymatous nephritis) of sugar in the blood. In a very large number of analyses of the blood of rabbits, it was found that the normal sugar content varied between 0.11 and 0.18 per cent. (These experiments were carried out in the Government Laboratories at Washington, D. C.). Feeding sugar to rabbits raised the sugar content of the blood to 0.24 per cent. Subcutaneous administration of caffein (150 mg. per kilogram of body weight) induced marked hyperglycemia, the highest figure observed being 0.45 per cent. While zinc causes a marked glycosuria (by intravenous injection of the malate), it does not produce hyperglycemia; the sugar content in these cases seems to be normal or subnormal.

SUGGESTION OF CLOCK DIALS ON ANESTHESIA CHART

F. St. Clair Reilly, M.D., Havre, Mont.

As an addition to any good chart I think this will settle the question always asked the man at the head of the table, "How long have I been working?" It may also point an accusing finger at many surgeons. I believe it is better for the surgeon to wait five minutes than for the patient to breathe ether for forty-five before the first incision. These clock dials may be printed or put on the chart with a rubber stamp, and for the keeping of authentic records, only the stroke of a pencil is necessary.



Clock dials indicating unnecessarily prolonged anesthesia before beginning the operation.

A New Method for Hemostasis in Suprapubic Prostatectomy.—It requires no argument to prove that reliable and definite hemostasis is one of the principal requirements of the technic in suprapubic prostatectomy. Heretofore, procedures employed have been either by way of experiment, as the injection of serum, or temporary as digital compression, or an attempt at complete checking of the bleeding by tamponade of the prostatic site, which quite often led to renewed hemorrhage when the tampon was removed. The suturing of the prostatic cavity requires a considerable time and also may have as an accompaniment the retention of infectious secretions. It occurred to me to utilize the well-known hemostatic quality of fat for hemostasis in prostatectomy, using a free transplant of abdominal fat for a permanent tampon in the cavity resulting from the enucleation of the enlarged part of the prostate gland. The procedure is as follows: After completion of the enucleation the edges of the trigonal incision are seized with clamps and the cavity is temporarily packed with gauze, which may be advantageously dipped in serum. Now as much fat as its deemed necessary for the filling of the prostatic bed is dissected out of the abdominal wall, following either line of the skin incision, then the gauze packing is removed and the transplant is placed in the cavity resulting from the enucleation. The trigonal incision, now, with a few sutures inserted at the upper angle, is narrowed down to such a degree that any slipping out of the transplant is prevented. After this is done the bladder and abdominal wounds are attended to in the usual way. This procedure in nineteen cases so far was followed by such good results that I feel justified in recommending it to interested operators for further trial.—G. Kolischer, M.D., Chicago.

Special Article

PRACTICAL PHARMACOLOGY *

(*Continued from page 149*)

II

DRUGS WHICH ACT ON THE CENTRAL NERVOUS SYSTEM

We may consider the drugs of these groups with reference to the dominant action, whether it be stimulation or depression, and with reference to the part of the nervous system on which they exert the most pronounced effect. The action of a drug is never limited to one part of the nervous system; though in a given case it may be exerted mainly on the brain or medulla. Few drugs produce stimulation without some subsequent depression, or depression without at least fleeting stimulation.

Drugs which act mainly on the central nervous system will be classified as follows:

A. Stimulants: 1. Drugs acting mainly on the spinal cord, but having *important actions on the* medulla (strychnin group).

2. Drugs acting mainly on the medulla, but having important actions on the brain or cord (atropin group).

3. Drugs acting mainly on the brain, but with important actions on the medulla or cord (caffein and theobromin).

B. Depressants: 4. Drugs which act on the brain first, then on the medulla (morphin group).

5. Drugs which act mainly on the heat centers (antipyretics and analgesics).

6. Drugs which depress first the great brain, then the cord and the medulla last (hydrocarbon narcotics). (Order of involvement of first importance.)

This classification (like others used in these articles) is only approximate, and no attempt will be made to adhere to it rigidly.

A. STIMULANTS: 1. ACTING MAINLY ON THE CORD—STRYCHNIN GROUP

There are several drugs which have an action on the spinal cord similar to that of strychnin. While this is of some importance as a side action, strychnin and nux vomica are virtually the only drugs which are used for increasing the reflex activity of the cord.

Thebain (an alkaloid occurring in opium) has an almost pure strychnin-like action on the cord, and caffein, morphin and codein possess the action to some extent, though they rarely exhibit it in man. Caffein and codein are seldom given in doses large enough to cause any increased reflex excitability. In morphin poisoning in man death results from paralysis of the respiratory and other centers before the action on the cord has time to develop. *In view of* the subsidiary importance of reflex stimulation in the action of these drugs, the present article deals entirely with strychnin.

Strychnin acts on the spinal cord of vertebrates in such a way that the reflexes are increased, the effect increasing with the size of the dose, so that with the largest therapeutic doses in man there is *distinct* twitching of the voluntary muscles, and with larger doses any slight stimulus, such as touching, induces a convulsive movement involving the closely related groups of muscles. If an excessive dose has been given, a stimulus which induces any reflex movement at all suffices to cause a convulsion involving all the voluntary muscles of the body. The intensity and duration of the convulsions increase with the size of the dose. The convulsion is followed by a period of depression varying from a few seconds to some minutes, and usually becoming longer with successive convulsions; but death may follow the first convulsion.

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* This is the second of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

Strychnin convulsions are typical; there is at first a sudden contraction of the voluntary muscles, and if the dose has been very large this is immediately followed by tetanus with opisthotonos, the convulsion terminating with a few clonic jerks, followed by the pause during which the reflexes are actually depressed. If the first convulsion was brief, the depression may be followed almost immediately by a second convulsion if any stimulus is applied, or after an interval the length of which depends on various circumstances. The succeeding convulsions are almost exactly like the first in character, but they may be of shorter or longer duration.

ACTIONS OF STRYCHNIN ON THE MEDULLA

The actions of strychnin on the respiratory and vasomotor centers in the medulla probably differ only in degree from those on the cord, but it is difficult to determine the precise nature of this action on the medullary centers, and opinions differ as to the value of strychnin in conditions of circulatory depression.

When a normal animal is anesthetized and strychnin is injected into the circulation, no appreciable effect on the blood-pressure is produced until an amount is given equal to that which causes a distinct increase in the reflexes in a normal animal. Touching or pinching then causes a sudden rise of blood-pressure and a rapid return to normal. If a convulsive dose is injected, the rise in blood-pressure corresponds in duration to the convulsion. This rise of blood-pressure is wholly independent of any spasm of the voluntary muscles, for it occurs in exactly the same way in curarized (motionless) animals.

It is impossible to state whether or not therapeutic doses of strychnin affect the vasomotor centers so as to increase the blood-pressure when this is abnormally low, but it seems probable that in pathologic conditions with low blood-pressure, strychnin may render the vasomotor centers more susceptible to stimulation, and it is certain that it affects the circulation indirectly by increasing the tone of voluntary muscles through its action on the spinal cord in suitable cases.

The action of strychnin on the respiratory center is probably analogous to that on the cord, rendering it more responsive to stimuli, which normally play such an important rôle in the rate and depth of respiration, and under the influence of therapeutic doses of strychnin the carbon dioxid of the blood causes an increased respiratory movement, this being more pronounced when the respiratory center has been previously depressed by a narcotic.

With excessive (convulsive) doses of strychnin the respiratory center is first stimulated and later depressed. During the convulsions the respiration ceases, owing to the rigidity of the muscles of the chest; this causes an extraordinarily rapid increase in the carbon dioxid in the blood, which stimulates the respiratory center. Nevertheless, there is an interval, following the cessation of the convulsion and before the reinstatement of respiration, during which the center is evidently depressed, but this depression is much briefer than is the depression of the cord, as a rule, and the respiration begins shortly and is then deeper or more rapid than before the convulsion.

Following large doses the respiration fails to be reinstated after one of the convulsions, it may be the first, but usually after the second or third. Though opinions differ concerning the value of strychnin as a stimulant to the vasomotor centers, there is little doubt about its being an active stimulant for the respiratory center.

Strychnin stimulates the vagus center in the medulla, causing some slowing of the heart, but the rate of the heart depends on so many factors that this effect is not pronounced with therapeutic doses.

ACTIONS OF STRYCHNIN ON THE BRAIN

Strychnin increases the reflexes in the brain, especially those of the special senses, and vision, smell, hearing, touch and taste are rendered more acute. The effects on the eye and ear are utilized therapeutically. Strychnin sometimes exerts a marked psychic effect, causing a feeling of exaltation and relief from fatigue. This action is quite variable, and it is impossible to state when it may be expected.

ABSORPTION AND EXCRETION OF STRYCHNIN

Strychnin exerts a much greater action when administered intravenously than when administered in any other way, but it may be absorbed fairly rapidly from the gastro-intestinal tract and exert as great an effect after oral administration as after subcutaneous injection. The full effects of the oral dose are seen usually in about half an hour; the effects of poisonous intravenous doses are exhibited almost immediately. An extract of nux vomica, or a pill containing strychnin and some colloidal substance, is commonly employed when slow absorption is desired with prolonged action on the local nervous mechanism in the walls of the intestine.

Strychnin probably leaves the blood-stream very rapidly, and the larger part of a therapeutic dose is almost certainly eliminated from the body within a few hours, for fairly large doses may be administered several times daily for many days without causing toxic symptoms. Cushny states that elimination is not complete for a period varying from two to eight days. Strychnin appears in the urine soon after its absorption into the blood, and an amount equal to several times the normally fatal dose has been recovered from the urine of a dog in a period of five hours, during which large amounts of solution of sodium sulphate were injected intravenously in order to induce copious diuresis. (Unpublished experiments of R. A. Hatcher.)

TOXICOLOGY

Strychnin is among the most poisonous of the commonly used alkaloids, and as little as 0.03 gm. (½ grain) has proved fatal to a man. It is probable that the average fatal dose for a previously healthy adult is about 0.10 gm. (1½ grains). With appropriate treatment patients have survived much larger doses. One should never abandon hope of saving life until it is extinct, whatever the dose taken.

Death in strychnin poisoning usually results from respiratory paralysis, but a previously weakened heart may stop as the result of the sudden excessive rise in blood-pressure.

The method to be followed in the treatment of strychnin poisoning will depend on a number of factors, including the following: The total amount of the poison taken; the amount which remains unabsorbed (in case of its oral administration); the presence or absence of hyperexcitability or convulsions. Hence the following remarks are only intended by way of suggestion, and the treatment must always be adapted to the needs of the case in hand.

The physician will rarely be called on to treat strychnin poisoning after the administration of the drug in any way except by the mouth, because death usually follows so swiftly after the subcutaneous injection of a massive dose that no opportunity is afforded for effective interference.

So promptly does death usually follow the absorption of a fatal dose of strychnin into the circulation, that the mere fact that the patient is alive affords proof that at most but little more than the normally fatal dose has been absorbed, and when there is reason to suppose that any poison remains in the stomach, the chief efforts should be directed toward its removal or destruction.

If there is no increased reflex excitability, one should proceed to empty the stomach as quickly as possible. It may be washed with water to which strong tea[1] or half a pint or more of a 1 per cent. solution of potassium permanganate has been added, or with water alone if the tea or potassium permanganate is not readily available.

If the means for washing the stomach are lacking, an intramuscular injection of 6 mg. (1/10 grain) of apomorphin may be given at once, and strong tea or a pint of 0.5 per cent. solution of potassium permanganate may be swallowed by the patient. Should it become necessary to abolish vomiting, this may be done by inducing anesthesia with chloroform.

If hyperexcitability has been induced while there is reason to believe that the stomach still contains a notable amount of strychnin, the treatment is not so simple. It is imperative to remove or destroy any of the poison which remains in the stomach when it is practically certain that its absorption would prove fatal despite any treatment, but the washing of the stomach or emesis would be dangerous at a time when such measures are liable to cause convulsions. Emesis is then contra-indicated, and anesthesia must be induced before the stomach-tube is passed.

An especially difficult question arises when it is known that much more than the average fatal dose of strychnin has been swallowed, and when, owing to the length of time which has elapsed since it was taken, and the severity of the symptoms present, it seems probable that much of the poison has passed into the duodenum. In such a case the poison cannot be removed by gastric lavage, and it probably cannot be precipitated or destroyed by chemical agents, yet its complete absorption must almost inevitably prove fatal.

The procedure, however, in such cases must be much the same as in those in which some of the drug is supposed to remain in the stomach, and in addition, it is necessary to empty the bowel as quickly as possible, preferably by means of a copious saline cathartic.

The measures so far discussed are concerned with the prevention of the absorption of strychnin; apart from this are the questions of antagonizing its action after absorption and of hastening its elimination, both of which enter into consideration after absorption occurs, whatever the channel of administration.

Strychnin is eliminated by the kidneys, and whatever physiologic antidote is employed it should not interfere with diuresis, which should be promoted to the utmost. Hot tea or other hot liquids will induce diuresis, but the action is somewhat slow, and unnecessary loss of time should be avoided; hence a large amount of hot fluid should be introduced into the stomach, while as much should be introduced into the rectum and lower bowel as can be retained with comfort. In urgent cases it would seem to be justifiable to inject a quart or more of a sterile 2 per cent. solution of sodium sulphate into the veins, under suitable precautions, of course.

The value of ether in strychnin poisoning is shown by the fact that animals under its influence—they must be anesthetized completely—will survive more than twice the normally fatal dose of strychnin. Chloroform may be used to hasten the induction of anesthesia, but this should be continued with ether so long as may be necessary. Special stress is placed on the use of ether, for while hydrated chloral is commonly advised as an antidote to strychnin, pharmacologic experiments show that hypnotic doses of it are nearly, or quite, useless, and narcotic doses are dangerous in various ways. The dosage cannot be regulated so as to produce only the desired action; it is injurious to the heart; it lowers blood-pressure to the point that the respiratory center must suffer, while the elimination of the poison is seriously hindered.

Anesthesia may be maintained with ether without any of these disadvantages.

Artificial respiration should be employed when severe convulsions indicate that the respiratory center will suffer depression. One should not wait until actual respiratory failure occurs before instituting this measure. Unless the dose has been excessive, the convulsions can be controlled by this means. The inhalation of oxygen is an aid in hastening the destruction of strychnin. The treatment of strychnin poisoning may be summarized then as follows: removal of the drug from the stomach; precipitation by tannin; destruction by potassium permanganate; control of convulsions by ether; artificial respiration; elimination by copious diuresis, and avoidance of all stimuli, including touching the patient, noise and flashes of light. The chief reliance, if the patient is seen in time, must be placed in efforts to prevent the absorption of large amounts into the circulation.

THERAPEUTIC USES

Strychnin is probably not directly curative in any disease, but its capacity for increasing the activity of the reflex centers in the cord, medulla and brain suggest its employment in various conditions in which these centers are depressed, and its action on the vasomotor and respiratory centers indicates its use in various conditions attended with lowered blood-pressure and interference with respiration.

It is used in many forms of incomplete motor paralysis, but it should not be used when the paralysis results from a lesion in the cord, or in the presence of inflammation of the nerve-centers; it is especially contra-indicated in the inflammatory stage of infantile paralysis (anterior poliomyelitis). Opinions differ concerning its value after the paralysis has developed. In motor paralysis due to lesions in the brain, it is useful, in moderate doses, to maintain the tone of voluntary muscles through the increased reflexes.

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[1] While the tannin of tea is useful as a precipitant of strychnin (Sollmann), it should be remembered that the beverage varies enormously in its tannin content. Some teas contain little tannin, and are practically useless for preparing an alkaloidal precipitant. While the physician is preparing to wash the stomach of the patient, he may have tea prepared as follows: Hot water is poured on the leaves and allowed to stand about one minute; this infusion is thrown away, because it contains caffein, which is synergistic with strychnin, but little of the tannin. Hot water is then poured on the leaves and allowed to stand about five minutes. This infusion contains most of the tannin and little caffein.

Respiratory stimulants are useful when the center is depressed by narcotics, including alcohol, chloroform, ether, hydrated chloral and morphin, and in diseases of the respiratory passages and the lungs, including bronchitis and pneumonia, when there is a tendency toward respiratory depression. Strychnin can be used, but it must be remembered that large doses of strychnin depress the respiratory center, after first stimulating it. Such large doses are therefore contra-indicated, especially in narcotic poisoning, in which the stimulant action of the strychnin might be entirely masked by the narcotic, and yet the depression due to strychnin would be added to that of the narcotic. Caffein would seem to deserve the preference as a respiratory stimulant in narcotic poisoning at least.

Strychnin is often used for increasing the blood-pressure, despite the fact that no essential increase follows the administration of non-toxic doses to normal animals. It is quite possible that its effects in pathologic conditions attended with abnormally low blood-pressure may be beneficial, and, indeed, Osborne states that it is the sheet-anchor when all of the vital centers are depressed in pneumonia.

It is often used in shock, but opinions vary concerning its value in that condition. The mechanism of shock is so little understood that it is impossible to state positively what the effects of strychnin are likely to be. Crile believes that it has no value in that condition, but that, on the contrary, it is decidedly harmful, actually increasing the danger. In cases in which respiratory depression is the primary cause of shock, it seems probable that strychnin may be of value, but we have no satisfactory evidence that therapeutic doses are capable of increasing the blood-pressure directly to any notable degree in shock.

Strychnin is often used with occasional benefit in disturbances of vision (amblyopia, amaurosis) when there is no anatomic change or only incipient optic atrophy, and in impairment of hearing of central origin. It is often used to improve the tone of the weakened sphincters (in enuresis), but when there is spasm of the vesical sphincter it is contra-indicated; atropin should be used instead.

The use of strychnin as a simple bitter for improving the appetite and digestion and as an addition to cathartics will be discussed in connection with other drugs belonging to those groups.

It is often used more or less empirically in many different conditions, in some of which it is certainly useful, but in others probably useless.

It is often recommended as a "cardiac tonic," but we have no evidence of its direct action on the heart. It may slow the heart through vagus stimulation at times; it may improve the circulation through its actions on the vasomotor and respiratory centers—for one cannot wholly separate the influence of the respiration and circulation—and thus through the circulatory changes it may improve the nutrition of the heart, much as it causes improvement in the voluntary muscles and other tissues of the body, when it improves the circulation by increasing the muscular activity.

MATERIA MEDICA

Nux Vomica, U. S. P., the seed of *Strychnos Nux-vomica,* an oriental tree, at present comes chiefly from India and Ceylon. The fruit, a berry, is of the size and appearance of an orange, and contains usually from two to five of the flat circular seeds embedded in a mucilaginous pulp. The seeds are hard and extremely tough.

The drug is probably the most widely used (and abused) article in our materia medica, and with its alkaloid, strychnin, it is prescribed more frequently even than opium and its alkaloids and derivatives.

Extractum Nucis Vomicae, U. S. P., a powdered extract which contains 5 per cent. of strychnin, is usually employed in the form of a pill or capsule, frequently combined with iron and quinin, as a bitter tonic.

It may be prescribed somewhat as follows:

		gm.	
℞	Extracti nucis vomicae.......	0|4	gr. vi
	Ferri reducti................	2|5	gr. xl

M. et fac pilulas xx.
One pill 3 or 4 times a day.

Or as follows:

		gm.	
℞	Extracti nucis vomicae......	0|4	gr. vi
	Quininae sulphatis..........	2|0	gr. xxx
	Ferri reducti................	2|0	gr. xxx

M. et fac capsulas xx.
One capsule to be given 3 times a day.

Tinctura Nucis Vomicae, U. S. P., is the more generally useful of the preparations of nux vomica, and is administered preferably diluted with water, or with water and syrup or fruit-juice at the time the dose is taken.

Strychnina, Strychninae Nitras and *Strychninae Sulphas,* U. S. P., are the three forms in which strychnin is official. They are colorless crystals or white powders, having an intensely bitter taste, which is perceptible in solutions containing 1 part of the alkaloid or its salt in 700,000 parts of water.

Strychnin and its salts may be administered in the form of pills, capsules or cachets, when the bitter taste is not desired. It is seldom administered by the rectum, but it is absorbed readily and may be given in the form of suppositories. It may be given hypodermically when for any reason the oral or rectal administration is contra-indicated, or when rapidity of action is essential; and in urgent cases it may be given intravenously in physiologic salt solution, of course, with the proper technic.

The salts are precipitated by the usual precipitants of alkaloidal salts, including alkalies, alkali carbonates, and by the bromids and iodids. Combinations of strychnin salts with precipitants in solution should be avoided, as the precipitate might escape detection and nearly the whole amount be taken in the last dose.

Dosage: The average single dose of strychnin, sulphate or nitrate, for oral administration is 0.001 gm. (1/60 grain), but the dose varies so widely that the statement of the average dose does not convey much information unless the purpose for which it is to be used is indicated. As little as 0.00065 gm. (1/100 grain) is often used as a bitter tonic, and as much as 0.010 gm. (1/6 grain) may be given daily for short periods. Much larger doses have been used, but there is no satisfactory evidence that they are necessary, and their use is attended with danger. The dose, whatever it may be, should be reduced or discontinued for a few days when the appearance of muscular twitching indicates that the therapeutic limits are reached.

The treatment of partial paralysis calls for the administration of doses of 0.003 gm. (1/20 grain) three or four times a day for ten days, with an interval of a week before continuing it. Halsey states that at least that amount must be given to overcome depression of the central nervous system, especially in infectious diseases.

Poisoning by hydrated chloral, alcohol, chloroform and other narcotics may be treated with an initial intramuscular injection of 0.004 gm. (1/16 grain); if this causes an improvement in the respiration the dose may be repeated in about two hours if necessary, but if the strychnin adds to the depression, or if there is no improvement with that dose, caffein should be used, and, as stated previously, caffein probably should be used from the beginning. Morphin interferes with the movements of the stomach, and since strychnin is probably not absorbed readily from the human stomach, it should not be administered orally in the treatment of morphin poisoning, but intramuscularly, to secure quick action, and later by the rectum if desired.

Strychnin salts are absorbed readily from the gastro-intestinal tract under normal conditions, and from the subcutaneous tissues, the dose being approximately the same whether it be given by mouth, rectum or subcutaneously. In emergencies its action may be elicited almost instantaneously after intravenous injection, but the dose by this method of administration is only about half the oral dose.

Some authors state that large doses of strychnin may lead to toxic symptoms through cumulation, because of the slow elimination, but there is no danger of serious poisoning to be feared when the daily dosage is limited to 0.010 gm. (1/6 grain), and the administration stopped on the appearance of increased reflexes.

(To be continued)

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 151)

XV

COUGHS

Before discussing the infections of grip and whooping-cough, it may not be out of place to refer to the varying kinds of cough. The trained nurse at the school, if not the teacher, should be able to note and describe the character of a child's cough to the medical inspector. Only by careful observation can the early stages of whooping-cough be suspected and discovered.

Coughing is an expiratory effort caused reflexly by some irritation. The muscles of the lower part of the chest are most engaged in the act of coughing; hence in severe, prolonged or frequent coughing muscle tire occurs in the lower part of the chest, both anteriorly and posteriorly. The abdominal muscles all take part in this expiratory effort, and the erector spinae muscles, the serratus, and the quadratus lumborum are all utilized in a strong expiratory cough. These muscle contractions compress in all directions the lower part of the chest, and the air in the bronchial tubes is forced upward, and if there is no obstruction is expelled through the glottis. If there is obstruction, or even partial obstruction, the upper portion of the lungs, especially the apices, become dilated, and temporarily, or in severe cases, permanently, emphysematous.

Cough can be caused by irritation of any of the mucous membranes of the air tract, by irritations of the nerves in the lung tissue, by irritations of the pharynx, by reflex irritation of the vomiting center, and by any irritation that can reach, through the pneumogastric nerve, the center in the medulla. From any of these reflex causes efferent impulses are transmitted, and the result is a cough. Irritation in the nose and ear may cause cough.

Pain and muscle tire from prolonged coughing, besides occurring in the lower part of the chest, occur in the sides, low down, perhaps in the region of the insertion of the diaphragm, and also in the back even down in the lumbar region. These strong contractions of the abdominal muscles during coughing also aid in temporarily diminishing the capacity of the thorax by pushing upward the abdominal organs. At the same time there is a considerable force exerted downward, which may tend to cause uterine displacements, hemorrhoids and even involuntary urination.

Before this forcible expiration or cough there is generally a deep, quick inspiration; then the glottis is partially closed and the air is propelled upward forcibly, causing friction which tends to expel anything on the walls of the mucous membrane of the bronchial tubes and trachea. Even in simple bronchitis, if there is much coughing, there will be found increased resonance in the apices of the lungs, as there is probably always a temporary emphysema.

Nasal irritations may produce cough as frequently as they cause asthma. Irritations of the nasopharynx and pharynx proper frequently cause coughing, which is very likely to be accompanied by retching and even vomiting. An elongated uvula may tickle the epiglottis and cause spasmodic, quick expiratory coughing. This cause, however, is rare compared with the frequency of cough caused by an enlarged lingual tonsil, whether the tonsil is hypertrophied, contains dilated blood-vessels, or is inflamed. Any disturbance of this gland or lymphoid tissue may cause a tickling in this region sufficient to produce a very irritating and disturbing dry cough, which comes on sometimes in paroxysms, until a certain amount of mucus is literally scraped off. The very intensity of the cough so irritates the part, like scratching a spot on the skin that itches, as to stop the tickling sensation for a time. Irritations of the larynx almost always cause cough. Hence no examination of a patient who coughs is complete without a throat and larynx observation.

The dry bark of spasmodic croup is very characteristic. The noise is low pitched, and is a bark. If it is husky there is mucus or membrane present.

The cough of bronchitis can be of all descriptions; it may be dry, may be non-productive, and may be moist and productive. Pain in such cough (the same is true of grip) is referred under the sternum, and is due largely to the vibrations of the air causing pain to the inflamed mucous membrane of the trachea and perhaps larger bronchi.

The cough of pneumonia is at first somewhat painful, and the pain is referred to the side, near the nipple. This cough may be at first dry, but is soon productive and generally should be encouraged.

The cough of pleurisy is non-productive and undesired, and is never loud. It causes pain referred to the side, and is repressed by the patient. There is nothing to expectorate, and it should be discouraged and stopped.

The cough in the first stage of tuberculosis is often dry and catchy; it is a hack. There is no great intensity to this cough, and no necessity for it, and it should be discouraged. As soon as there is much local bronchial catarrh the cough should, as it is then productive, not be discouraged, except at meals, and in the presence of others; that is, such patients should be taught when to cough.

The cough of asthma is a wheezing affair and accompanied by all sorts of rattlings; the same type occurs in a stuffy, asthmatic bronchitis. This cough is generally not harsh.

The coughs of different individuals vary. Some always cough with great intensity, and others easily and lightly. Older persons seem to raise mucus and pus from the bronchial tubes with difficulty. It takes a great many coughs to raise the sputum for expectoration. Young children generally cough easily, but generally swallow their sputum. Very weak patients will hardly expectorate at all. In such cases the foot of the bed may be raised at night; also when they cough, while in bed, they should turn onto the side or stomach in order to raise the sputum, or they should lean over in order to have gravity aid as much as possible the expulsion of the mucus, etc. The cough of pertussis occurs in showers or paroxysms, and at the height of the disease the glottis closes during inspiration and the air is sucked in through a more or less narrow slit, giving the characteristic "whoop."

Persons coughing very hard, as typically in whooping-cough, but also in emphysema and in the severe bronchitis of strong, sturdy men, will cause a great deal of cardiac disturbance by retarding the flow in the large vessels of the thorax, thus increasing the work of the heart, especially of the right side. Such coughing can force backward the blood in the large veins, thus congesting all the organs, notably the eyes, face and head, and whooping-cough can cause a cerebral hemorrhage or a hemorrhage into the eyes. These patients may not infrequently have nosebleed, and even vomit blood.

ACUTE BRONCHITIS

A child with an acute bronchitis, with expectoration, whether with or without fever, should generally be sent home; or if he is not acutely sick and continues to attend school, he certainly should be watched. There is no question that, whether bronchitis occurs in an adult or in a child, the patient will recover more quickly if he remains in bed for one or more days.

The prophylactic treatment is the same as for an acute coryza, and these treatments will more or less relieve the congestion in the bronchial tubes and promote expectoration, if the disease is not aborted. The cough is at first non-productive, but as soon as mucus begins to be plentifully expectorated the cough is productive, the tightness in the chest is relieved, and the patient feels better. One of the best promoters of a free mucus secretion is ipecac, and a few drops of the syrup of ipecac, given every hour, unless nausea is caused; or from 0.03 to 0.05 gm. (about ½ to 1 grain) of the powdered ipecac may be given every two hours. The ipecac should never be pushed to the point of causing uncomfortable nausea. The dose should, therefore, as suggested, be very small.

In the second stage of bronchitis there is no expectorant that seems to work so well as ammonium chlorid, and the dose should be about 0.25 gm. (4 grains) every two hours. The bad taste of this drug may be well covered up by giving it in a sour mixture, as the syrup of citric acid and water. If the cough is excessive and more than the secretion calls for, there is possibly no better method for its control than to give small doses of codein sulphate. This may be combined with the ammonium chlorid in a sour mixture, as:

		Gm. or c.c.	
℞	Codeinae sulphatis.........	0|20	gr. iv
	Ammonii chloridi..........	5|	ʒ iss
	Syrupi acidi citrici.........	25|	fl.℥ i
	Aquae..............q. s. ad	100|	fl.℥ iv

M. et Sig.: A teaspoonful, in water, every two or three hours.

This prescription is for an adult, but may be readily modified according to the age of the child. If the codein is not desired, it may be omitted. If it is desired to give the ammonium chlorid less frequently, the dose may be made larger. If a sweeter mixture is preferred, the syrup of tolu may be substituted for the syrup of citric acid; or both the syrup of citric acid and the water may be omitted and the syrup of wild cherry substituted.

If the larynx is inflamed, the inhalation of simple steam, or various other inhalants, may be of value, but a patient with laryngitis of any type should be under very careful observation by a physician.

If the expectoration becomes more profuse and seems not to stop readily, terpin hydrate seems to be of value. The dose is 0.30 gm. (5 grains) about four times a day. This may be given in tablet or in powder; solutions are unsatisfactory as it is very insoluble. If deemed advisable it may be combined with codein or heroin in small doses. There is, however, no real advantage in heroin over codein.

If the coughing persists longer than a week, the sputum should be examined to determine what germs are present. If it proves to be a simple bronchitis, but prolonged, sodium iodid in small doses may be of value, especially if the patient is at all asthmatic, or if it is in an older person. Fresh air, good food and iron are always of value in curing all kinds of bronchitis. If the patient is a child and the nutrition is poor, cod-liver oil is good treatment. A bronchitis that will not stop must be treated as a pre-tuberculous stage of tuberculosis, and the patient should receive climatic, or open air rest cure treatment.

It should be emphasized that a patient with bronchitis is not properly supervised unless the temperature is taken, and this more or less frequently. A patient with a fever should remain at home, if he wishes to avoid complications that readily occur from an acute bronchitis or grip. The district nurse or the medical inspector should always take the temperature of a coughing child. If a child has any fever, it should be sent home and the family physician summoned.

ASTHMA

As previously mentioned, a child in school that is found to be asthmatic should be carefully examined by the medical inspector and referred to the family physician, and if necessary, to a nose and throat specialist, to determine whether or not there is a reflex cause, and to have this cause removed if possible. The asthmatic habit once well acquired is difficult to cure.

(To be continued)

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SATURDAY, JANUARY 16, 1915

COLUMBUS AND VESALIUS—THE AGE OF DISCOVERERS

Since the beginning of the new year, a series of celebrations of the four hundredth anniversary of the birth of Vesalius has taken place at various of the more important medical centers of the United States. There was to have been a magnificent memorial festival in Brussels, the birthplace of Vesalius, and an auxiliary celebration at Louvain, at whose university Vesalius obtained his preliminary and medical education. Owing to war conditions these celebrations were impossible, and it is interesting to realize that the great Flemish genius, to whom the world owes modern anatomy as it has developed for four centuries, had to look for the celebration of his quadricentenary to a country in the distant West discovered only about twenty-five years before his birth.

To Americans, perhaps the most interesting phase of Vesalius' life and career as a great founder in the most important of medical sciences is the fact that it should have occurred in such close relation to the discovery of America. His work represents a portion of the background of the intellectual life of Europe at the time of the discovery of this continent which must be known if the genuine significance of Columbus' great discovery is to be appreciated. Ordinarily, owing to rather limited knowledge of Columbus' environment and the difficulties which he encountered in securing assistance for his voyage, and the general skepticism with which his views as to the possibility of reaching land by sailing westward were met, it would seem as though there must have been little intelligence, slight diffusion of information, and an almost entire lack of incentive as regards human progress and development at that period.

Any such assumption, however, is quite contrary to the real state of affairs as regards culture and intellectual life during what may be called without too great demands on the historical imagination the century of Columbus, that is, the hundred years more or less from the birth of Columbus to the death of Vesalius. As a matter of fact, the number of men who did marvelously good work in painting, architecture, sculpture, and the arts and crafts at this time is wonderful. Columbus had in Italy three such supremely great contemporaries as Raphael, Leonardo da Vinci and Michelangelo. These are the greatest painters and sculptors since the time of the Greeks. They are much more, however. Raphael, besides being the greatest of painters, was one of the greatest of archeologic scholars of his time. Leonardo da Vinci once beat Michelangelo in sculpture, but thought of himself as a constructive engineer, and invented the wheelbarrow and the removable derrick, besides machines for sawing marble, lifting monoliths, filing saws and a number of others, and made basic discoveries in acoustics, botany and geology, as well as in anatomy and mechanics. Michelangelo was painter, sculptor, architect—nothing greater than St. Peter's has ever been built—and wrote sonnets that have only been equaled, probably not surpassed, by those of Dante and Shakespeare. All three of these men were alive in Vesalius' lifetime.

There were probably a score of artists in Italy in this period who would have been surpassing leaders in art at any other time. Such names as Titian, Botticelli, Fra Angelico, the Bellinis, the Vivarinis, Tintoretto, Veronese, Andrea del Sarto occur among the contemporaries of Columbus and Vesalius. Then, too, this was the great Renaissance period of scholarship, as well as the time when the most beautiful books ever printed were issued; it was the period of the learned women of the Renaissance, those scholarly "blue stockings" whom so many persons seem to forget when they talk of our period as the first in which women have ever been afforded the opportunity for the higher education. Besides, this period saw in every country in Europe a great development in music and the musical inventions, as well as in literature. Villon, for instance, and Charles of Orleans and the Pleiades and Rabelais did their writing at this time, and Montaigne was being educated for his life work.

It has been well said that whenever a period does any one thing well it always does well everything to which it seriously turns its attention. Following this rule, it is not surprising that there should have been a series of great scientists doing their work in what has been called the Columbus century. Copernicus revolutionized astronomy much more than even Vesalius did anatomy. Ambroise Paré, who has been called the Father of French surgery, wonderfully developed that department of medical sciences and practice. A series of botanists, practically all of them physicians, laid the foundation of botany broadly and deeply. The most important therapeutic discovery ever made, that of the use of mercury for the treatment of syphilitic conditions, received at this time its amplest development, with its indications and limitations. This is probably the most important period in the history of mathematics. Mechanics received a marvelous impetus from the great construction work undertaken by the architects of the time, and that magnificent series of contributions to the medical sciences in anatomy, physiology and clinical medicine was initiated. Such names as those of Eustachius, Fallopius, Columbus (Realdus), Verolius, Sylvius, Guinter of Andernach, Servetus, Fracastorius and many others occur at this time. Their books have now become precious treasures in medical bibliography. They were issued as a rule in magnificent printed editions not unworthy of Vesalius' own great textbook of anatomy, which has been declared probably the most beautiful medical book ever printed.

It is this background of the life of Vesalius and its relation to the discovery of America that should remain as a precious memory to the American medical profession, on whom the war has caused to devolve the duty of celebrating the four hundredth anniversary of the great Father of Modern Anatomy.

THE DELICACY OF ORGANIC REGULATION IN THE BODY

In the protest against the current tendency to seek the explanation of all physiologic processes in purely mechanical factors and to attempt the solution of the problems of living organisms on a physicochemical basis solely, the distinguished Oxford physiologist J. S. Haldane has cited some striking illustrations of the delicacy of organic regulation in the body.[1] We do not refer to these for the purpose of joining the author in his revolt against the hypothesis that life, as a whole, is a mechanical process, or to emphasize the difficulties into which the mechanistic conception falls when it deals with an organism such as that of man. The human body is a vast assemblage of the most intricate and delicately adjusted cell mechanisms, each being so constituted as to keep itself, as Haldane remarks, in working order year after year, and in exact coordination with the working of the millions of other cell mechanisms which make up the whole organism. The present comment is intended, rather, to point out some of the delicate and persistent responses that are encountered in the body — reactions that are all too often overlooked by the physician who centers his attention on some single organ or some localized function, and forgets the surprising interrelations between distant parts of the organism.

One of the most striking instances of this cooperative functioning is exemplified in the astounding fitness with which the kidneys, respiratory center, and other parts regulate the composition of the blood. Haldane reviews this topic as follows: The respiratory center is so extremely sensitive to any increase or diminution of the partial pressure of carbon dioxid in the blood that a diminution 0.2 per cent. of an atmosphere, or 1.5 mm. of mercury, will cause apnea, while a corresponding increase will double the breathing. The recent researches of Hasselbalch have afforded experimental evidence of what had already seemed very probable — that the stimulus to which the center responds is the difference in hydrogen ion concentration, or acidity, brought about by the very slight deficiency or excess of carbon dioxid. He has also investigated quantitatively the effects on the hydrogen ion concentration of the blood of varying the partial pressure of carbon dioxid. The hydrogen ion concentration of the blood during rest is extraordinarily constant, and remains so day by day and year by year. As the amount of acid and alkali passing into the blood from the food and other sources is constantly varying, it follows that the regulation of hydrogen ion concentration is mainly brought about by the kidneys. It has been known for long that the urine varies in acidity or alkalinity according to the diet; but Hasselbalch has measured the actual variations in hydrogen ion concentration. It appears that during ordinary resting conditions the variations in hydrogen ion concentration of the urine are about a hundred thousand times as great as those of the arterial blood. Thus the kidney epithelial cells react so delicately to variations in hydrogen ion concentration of the blood, that the very smallest variation in the direction of acidity or alkalinity excites them to excrete a liquid which is, relatively speaking, intensely acid or alkaline, the net result being that the normal hydrogen ion concentration of the blood remains practically constant.

The beauty of organic regulation is not confined to this field alone. We are reminded that we meet the same delicacy of adjustment in the regulation of such things as body temperature, blood volume, or heat production. So accurately does the body adjust its consumption of oxygen and of food material to its energy requirements that it can actually be used, as Rubner found, as a calorimeter; for it substitutes consumption of proteins, carbohydrates, and fats for one another in exact proportion to their energy values as determined with a calorimeter. In Liebig's time this delicate regulation was altogether unknown.

It may matter little whether such illustrations compel us to abandon attempts at a "simple" explanation in terms of chemistry and physics, and lead us to conclude with Haldane that such a conception of biologic processes breaks before the phenomena of life. We may prefer, with the mechanists, to await the further revelations of science before accepting any vitalistic or spiritualistic interpretations. Nevertheless, we can still agree with Haldane that "it is hard to realize that something which looks under the microscope like nothing more than a somewhat indefinite collection of gelatinous material can react, true as the finest mechanism of highly tempered steel, to the minutest change in its environment."

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[1] Haldane, J. S.: Mechanism, Life and Personality, New York, E. P. Dutton & Co., 1914.

A NEW DEPARTURE IN MEDICAL LICENSURE

The unsatisfactory results of the conventional methods for drafting laws for the regulation of the practice of medicine have been generally admitted. In many states, the introduction of bills providing for separate boards and different standards for each new and fantastic sect or cult has become an expected feature of every session of the legislature. Yet the growth of knowledge regarding preventable diseases, and the increasing appreciation on the part of the public of the importance of state efforts for the conservation of life, are developing an appreciation of the importance of regulating equitably and permanently the licensing by the state of those who desire to treat the sick for compensation.

As an executive and as a member of both houses of the state legislature for many years, Hon. George H. Hodges, Governor of Kansas for the last two years, has had an extensive opportunity for consideration of this question. Realizing the unsatisfactory condition of the practice laws in most of the states, the governor appointed a commission to consider the entire question and to draw up and recommend for passage a bill providing a single standard for all persons desiring to treat the sick, regardless of the school of practice to which they might belong. On this commission were appointed Dr. J. A. Milligan of Garnett, formerly a member of the state senate; Dr. J. E. Sawtell of Kansas City; Prof. W. L. Burdick of Lawrence, dean of the law school of the state university; Hon. Fred D. Smith of Hutchinson, formerly speaker of the House of Representatives, and Mr. F. T. Ranson of Wichita, president of the Stock-Yards National Bank. This commission has drafted a bill providing for a preliminary examination of all persons desiring to practice medicine, surgery or any other form of healing art. The bill provides for a board of preliminary examination, made up of the chancellor of the state university, the president of the state agricultural college and the president of the state normal school, *ex officio,* who shall examine all persons desiring to treat the sick in any way. Any persons seeking a license from the state medical board, the board of osteopathy, the board of chiropractic or any other board must first satisfy the board of preliminary examination that he has had a four years' course in some reputable or established high school or its equivalent, and has spent at least four years of at least eight months each at some reputable professional school which includes in its course anatomy, physiology, pathology, surgery, obstetrics, chemistry, bacteriology, symptomatology, diagnosis, urinalysis, hygiene and sanitation. Suitable sections for the administration and enforcement of the act are included, together with sections amending the medical practice, osteopathic and chiropractic laws so as to make them uniform with the proposed bill.

Medical practice acts are primarily and solely for the good of the public. The report of this commission marks an epoch in medical legislation. It is the first distinct recognition of two important principles which must sooner or later dominate such legislation in all of our states. The first is the necessity and equity of a single standard for all persons, regardless of "schools," and by inference, the inequity of different standards for different schools. The second and equally important principle is that the examination and licensing of persons desiring to treat the sick for compensation is not a medical but an educational problem. The recognition of this fact in the designation of the three leading educational authorities of the state as the board of premliminary examination is a most important step in the development of better conditions in state regulation of the practice of medicine.

DYSPNEA IN CARDIORENAL DISEASE

Certain types of both cardiac and renal disease are attended with disturbances in respiration which occasion unpleasant manifestations. Sometimes the conditions of the heart and kidneys are believed to contribute jointly to the difficulty that may arise. The occurrence of Cheyne-Stokes breathing in uremia has been attributed to cardiac failure which is undoubtedly one of the common causes of such dyspnea; but the labored breathing at times attending renal disease may be independent of the heart in its origin. There is urgent need to-day of a clearer understanding of the immediate physiologic and pathologic conditions which underlie dyspnea, instead of the vague charges against the different organs which are more indirectly involved in the transaction.

The questions to be solved concern the nature or size of the stimulus to rapid respiration. The well-established view that the exciting stimulus to the respiratory center is the carbon dioxid content of the blood has been broadened to refer to the hydrogen ion concentration of the circulating fluid. The variations in the carbon dioxid content of the blood, and consequently of the alveolar air, are but the result of the attempt on the part of the organism to keep the hydrogen ion concentration of the blood at a constant value. The carbon dioxid in the blood rises as the amount of non-volatile acid falls, and the carbon dioxid falls as the production of other acids rises. Any tendency to the production of an acidosis in the body is immediately compensated for by an increase in respiration and a washing out of carbon dioxid. It seems probable that the kidney is the fundamental regulator of the reaction of the blood, but the lungs, acting more quickly in response to sudden calls, serve, as has lately been remarked, as "the more delicate balance-wheel of the regulatory mechanism."

Hasselbalch[1] has emphasized the fact that in addition to the acid stimulus, the excitability of the respiratory center must be taken into account in any consideration of the factors that govern the chemical regulation of respiration. Even with an unchanged composition of the blood in respect to non-volatile acids and carbon dioxid, the threshold of excitation of the center may be altered and change the respiratory function. According to Lindhard,[2] the excitability of the respiratory center varies inversely with the oxygen tension.

Blood, which directly bathes the respiratory center, urine, which represents the outcome of the renal device for controlling the neutrality of the blood, and the alveolar air, by which the pulmonary regulatory device is judged, all need to be studied in any fundamental investigation of the dyspnea encountered in cardiac and renal disease. A good beginning in this direction has been made at the Peter Bent Brigham Hospital in Boston by Dr. Francis W. Peabody.[3] As he has pointed out, it is quite possible that different causes for the dyspnea in various types of uncomplicated heart disease may be ascertained, and the study of large numbers of cases may lead to the recognition of definite groups of functional derangement.

In uncomplicated cases of chronic nephritis the mild acidosis which is a frequent accompaniment is taken care of by the kidneys as a rule. According to Peabody, it is only in uremia and usually only in very advanced uremia that non-volatile acids accumulate in the blood in an amount sufficient to cause depression of the tension of carbon dioxid in the alveolar air. In the terminal stage of uremia there may be a high grade of acidosis. The development of acidosis is not the direct or sole cause of dyspnea associated with cardiorenal disease. A high grade of acidosis may exist without causing a change in respiration which is evident on the ordinary clinical examination. In some cases of cardiac disease accompanied by dyspnea there is evidence of a slight accumulation of non-volatile acids in the blood. In other cases there is no evidence of such an accumulation. The hydrogen ion concentration of the blood remains normal.

Peabody has shown groups of cases in which the degree of acidosis is not sufficient to account for the dyspnea on the basis of an increase in the stimulus to respiration alone. He concludes that an important factor in the causation of dyspnea in cardiac disease is an increase in the excitability of the respiratory center. Such a change in excitability may well be caused by a lowering of the oxygen tension, and be dependent on an inadequate blood-flow. There may, of course, be developed some as yet unknown substance which affects the stimulus. Until the excitability of the respiratory center under pathologic conditions has been experimentally studied, we may accept the hypothesis tentatively advanced involving the consequences of a poor circulation and possibly a partial oxygen want at the respiratory center. In combined cardiorenal disease, the dyspnea would thus be a circulatory feature, the renal condition playing only an accessory part.

THE HIGH-CALORY DIET IN TYPHOID FEVER

The fear has at times been expressed that the administration of large amounts of food during the febrile stage of typhoid fever may cause too great an increase in heat production and in turn a rise in temperature. From a purely clinical point of view von Hoesslin[1] long ago doubted this possibility. The modern conception of the specific dynamic action of the foodstuffs in metabolism has, however, again given some justification for the reconsideration of the question. It is now admitted that the total metabolism of normal individuals is raised after the taking of food when the latter is furnished in quantities larger than the "basal" requirement. If, for example, the energy metabolism of a subject at rest and without food is determined, the administration of a diet just equivalent to the requirement thus ascertained will not suffice to maintain the usual energy balance. The metabolism of the ingested foods results in raising heat production; and this is the phenomenon of the specific dynamic action of the foods, so called by Rubner.

Whether or not the increase in heat production becomes evident depends on the environment. So long as the chemical regulation of body temperature is called into play, the extra heat liberated may compensate for heat which might otherwise be liberated from other sources in the body; but in the absence of chemical regulation, that is, at temperatures (above 30 C. or 86 F.) at which physical regulation alone suffices for this function, the excess of heat production associated with liberal intake of food comes plainly into evidence. The proteins in the diet are by far the most potent factors in leading, under appropriate circumstances, to a liberation of energy considerably larger than that evoked by the non-protein foods.

The possibility of the exhibition of a specific dynamic action of food in typhoid fever as a consequence of the high-calorie diets which have of late again found favor in this country has to be reckoned with. The undue production of heat incident to the taking of exceptionally large amounts of food during the febrile stage would be far from desirable. In a careful series of measurements made in the Bellevue Hospital of New York, Coleman and DuBois[2] have found that in typhoid fever the liberal diets proposed by Coleman and his collaborators[3] occasion only a slight, if not negligible increase in heat production. It was quite unexpected to find that the large amount of food administered exhibits little or no specific dynamic action. In explanation of this result it is suggested that the stimulation of metabolism by the toxic agent is so intense that further stimulation by food is insignificant. The chief theoretic objection to the use of the liberal diet in typhoid fever is thus set aside.

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[1] Hasselbalch, K. A.: Neutralitätsregulation und Reizbarkeit des Atemzentrums in ihren Wirkungen auf die Kohlensäurespannung des Blutes, Biochem. Ztschr., 1912, xlvi, 403.

[2] Lindhard: Jour. Physiol., 1911, xlii, 337.

[3] Peabody, F. W.: Studies on Acidosis and Dyspnea in Renal and Cardiac Disease, Arch. Int. Med., August, 1914, p. 236.

[1] Von Hoesslin: Experimentelle Beiträge zur Frage der Ernährung fiebernder Kranken, Virchows Arch. f. path. Anat., 1882, lxxxix, 95, 303; Ueber den Einfluss der Nahrungszufuhr auf Stoff- und Kraftwechsel, ibid., p. 333.

Current Comment

A NEW JOURNAL ON SOCIAL HYGIENE

The American Social Hygiene Association, recently organized through the amalgamation of several independent organizations, has taken a position that indicates that it is soon to become recognized as the dominant organization working for social and sex hygiene. As one of its activities, the association has established *Social Hygiene*, a quarterly, the first number of which has just appeared. In it President Eliot sets forth the motives and purposes of the association, stating that the first work to be undertaken is that of ascertaining present conditions as regards sexual vice in American cities and towns; next, to study the various sorts of police action against vice and the statutes intended to control it; third, to devise and advocate effective control and legislation; and fourth, to cooperate with other organizations working along similar lines. President Eliot regards as one of the most difficult but indispensable tasks of the association the bringing about of a serious change in the ethics of the medical profession, particularly the attitude of the physician regarding knowledge on venereal infections gained from patients as a matter of professional confidence. While he admits that "in times past the faithful keeping by the physician of the confidences of his patient has been a fine element in the ethics of the profession," he also feels that "the recent discoveries in regard to the contagion, duration and far transmission of venereal diseases have made it necessary to put limitations on a physician's pledge of secrecy, lest he become a silent participant in one of the worst of crimes." Other articles discuss the red light abatement law, the legal protection of matrimony from disease, the regulation of prostitution in the United States, the relation between education and the social hygiene movement, the interest of life insurance companies in social hygiene, etc. Law notes, book reviews, abstracts and news items complete an interesting publication. If the present high purposes and plans of the American Social Hygiene Association can be realized, the organization will prove of enormous benefit to social and public health conditions in this country.

THE ODOR OF THE URINE—"URINOD"

The odor of the urine is *sui generis.* When the secretion from the kidneys is freshly voided it is comparatively odorless in distinction from the condition that develops on standing. Numerous known volatile substances have been described to occur in the urine both normally and under exceptional circumstances. Some of them are not free at first, but are gradually liberated by the chemical changes which may arise in the voided fluid. Known exceptional substances which have their origin in the diet or therapeutically administered materials are not included here. Drs. Dehn and Hartman[1] of the Chemical Laboratory at the University of Washington in Seattle have set up the thesis that hitherto known volatile substances of the urine are not responsible for its characteristic odor. Some of these, as ammonia, indol and possibly phenols, contribute to the composite nature of the odor. Dehn and Hartman believe that they have discovered the product which imparts to all urines their characteristic odor and which has apparently been overlooked by previous investigators. The newly found substance, which they name urinod,[2] occurs to the extent of only 1 or 2 parts in 100,000 parts of urine. This fact is made to account for the failure of a previous recognition and also indicates why the search for it has been so laborious. Quantities of urine as large as 1,000 liters (quarts) were manipulated in attempting to isolate the urinod. As a result a neutral, ill-smelling substance, with the empiric formula C_6H_8O, has been separated from the fluid. Its structural formula has even been suggested, and we are told that it occurs in urine in the conjugated form and is set free by fermentation. Urinod seems to be excreted in all samples of urine, and since it is found constantly, like urea, uric acid, etc., the discoverers believe that it must bear some relation to metabolism. According to Dehn and Hartman, the odor of urine, though largely caused by urinod, is blended with basic, acidic, phenolic and other neutral compounds, under different conditions of alkalinity, acidity and neutrality. Since urinod is not found in fresh urine in the free state, its offensive odor is not developed unless urine is permitted to ferment, is evaporated or ignited, is treated with acids or alkalies, or is secreted under pathologic conditions. It is well known that urea and other urinary compounds occur in small quantities in perspiration; and it is now suggested that some derivative of the newly heralded urinod or the urinod itself may also be excreted by the skin. The product is said to resemble the so-called body odor and may thus be a factor in the composite odor of ill-ventilated rooms occupied by man.

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[2] Coleman, Warren, and DuBois, E. F.: The Influence of the High-Calory Diet on the Respiratory Exchanges in Typhoid Fever, Arch. Int. Med., August, 1914, p. 168.

[3] Shaffer, P. A., and Coleman, Warren: Protein Metabolism in Typhoid Fever, Arch. Int. Med., December, 1909, p. 538. DuBois, E. F.: The Absorption of Food in Typhoid Fever, ibid., September, 1912, p. 177. Coleman, Warren: The High-Calory Diet in Typhoid Fever, a Study of 111 Cases, Am. Jour. Med. Sc., 1912, cxliii, 77; Weight Curves in Typhoid Fever, ibid., 1912, cxliv, 659; Diet and Metabolism in Fever, Tr. XV Internat. Cong. on Hyg. and Demog., Washington, 1912, ii, 602.

[1] Dehn, W. M., and Hartman, F. A.: The Volatile Substances of Urine, Jour. Am. Chem. Soc., 1914, xxxvi, 2118.

[2] Dehn, W. M., and Hartman, F. A.: Urinod, the Cause of the Characteristic Odor of Urine, Jour. Am. Chem. Soc., 1914, xxxvi, 2136.

THE INFECTIONS ON IMMIGRANT SHIPS

Under present regulations, ships having on board such diseases as scarlet fever and measles are not held at the maritime quarantine stations. Williams[1] says this is especially unsatisfactory with reference to immigrants arriving by sea, among whom the children often develop infectious diseases while on shipboard. Many persons are then exposed to the contagion, are landed and later develop these diseases in communities to which they go. Of the immigrants arriving at Ellis Island, for instance, many (in 1913, 87 per cent.) land and proceed at once to their destinations. Among those detained for various reasons it is found that infectious diseases frequently develop, a majority falling ill within the period of incubation of these diseases as calculated from the date of landing, indicating that they were infected on shipboard. These outbreaks occur so regularly that it seems reasonably certain that the same thing happens among those not detained. For the year ended June 30, 1913, out of 834 patients with measles admitted to the Contagious Disease Hospital at Ellis Island, 576 were taken from ships on the day of arrival, and 258 additional cases developed among detained immigrants subsequent to arrival. Of the latter number, 167 fell ill within a period after arrival indicating that they had been infected on board. These 167 cases developed among the 13 per cent. of immigrants detained. At the same rate among the 87 per cent. not detained there would have occurred 1,117 cases of measles, distributed wherever these immigrants scattered themselves, each case becoming a possible focus for the further spread of the disease. Fifty-six cases of scarlet fever developed among the 13 per cent. of detained immigrants, which, with a like calculation, would give 375 cases among the 87 per cent. of those not detained. The possibilities of the spread of these dangerous infections from this source are therefore great. Williams suggests as a remedy the proper isolation and handling of the cases on board ship, which is not at present carried out. Of the 576 cases of measles referred to, only 70 per cent. were "manifested" on the ship surgeon's report, while the other 30 per cent. were discovered only on examination at Ellis Island.

THE ASSIMILATION LIMIT FOR GALACTOSE

We have repeatedly urged caution in the strict interpretation of chemical tests for functional disorder in all cases in which the physiologic basis of the reaction involved was not yet clearly understood and the character of the response admittedly far from specific for the disturbance under observation.[2] Among recent methods in this field of clinical examination the determination of tolerance to different sugars has come into vogue. Glucose, levulose and galactose each has had its turn, and criteria of dosage have become established for each sugar. Thus 100 gm. of levulose or 40 gm. of galactose, respectively, have been employed of late in determining the tolerance of individuals in cases of suspected disease in which the assimilation limit for these carbohydrates is known to be depressed by some associated disturbance of function. In Goldscheider's polyclinic at the University of Berlin, Hoffmann[3] has reinvestigated the tolerance of human subjects for galactose, not only observing the excretion of sugar in the urine as an index of the limit, but likewise examining the sugar content of the blood and thus making use of the most recent of the methods of ascertaining the behavior of carbohydrates in the organism. On the basis of his findings he has concluded that in man the normal limit of tolerance for galactose is decidedly lower than it has hitherto been placed. He gives 15 gm. as a lower figure in place of 40 gm., originally proposed by Bauer[4] in von Neusser's clinic. This might seem like an inconsequential matter were it not true that estimation of the onset of alimentary galactosuria is actually being used for diagnostic purposes by some American clinicians at the present time. It is, therefore, highly important that the norm in the phenomenon should be correctly ascertained.

HEALTH BOARDS AND THE TAXPAYER

Appropriations for health purposes in many communities have in the past been granted reluctantly, and in most instances in insufficient amounts for effective work. It has been difficult to convince the taxpayer and the public official that there would be an adequate return for money expended. Health to them has seemed an individual matter, and health boards have been compelled to beg for every dollar. An improvement, however, is taking place, and the amount per capita of health appropriations is increasing. A more intelligent understanding of the objects of public health expenditures and of the returns to be had is developing. In some instances, the taxpayer is now on the other side of the proposition. He demands of the health board, having approved liberal appropriations, that it prevent epidemics which endanger the health and lives of himself, his family and his friends. Spartanburg, S. C., has been for several years a center for the study of pellagra by a scientific commission. This has no doubt promoted the study of health matters in general in that community, with the result that the local health service has been well supported, while the people have come to recognize the possibilities of disease prevention. With the idea in mind of the seasonal recurrence of certain infectious diseases, the Spartanburg *Herald* says:

> For the amount of money the citizens of Spartanburg are putting up these days for the public health department they have reason to expect service and results. . . . Just at this season of the year and a little later on, in February and March, most cities are visited by . . . scattering cases of diphtheria and epidemics of measles and whooping-cough. Measles and whooping-cough usually spread until they have exhausted the supply of youngsters who have come on since

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[1] Williams, L. L.: A Leak in Quarantine: Stricter Measures Needed on Immigrant Ships, Survey, Dec. 12, 1914, p. 291.

[2] Compare The Significance of the Starch-Digesting Enzyme of the Urine, editorial, THE JOURNAL A. M. A., Dec. 26, 1914, p. 2295.

[3] Hoffmann, E.: Die Toleranz gegen Galaktose in der Norm und während der Menstruation, Ztschr. f. exper. Path. u. Therap., 1914, xvi, 337.

[4] Bauer, R.: Wien. med. Wchnschr., 1906, xxi, 2537; Deutsch. med. Wchnschr., 1908, No. 35; Wien. klin. Wchnschr., 1912, p. 939.

the last year's epidemic, while diphtheria, because of its more violent character, is usually held in check. But the question in our mind is whether these things have to be. In modern days is there no way to prevent so much suffering and sickness on the part of the little children of a city? The Spartanburg health authorities could in no way carry their services nearer the homes of the people than by making a study of this question and taking every precaution possible to hold these things in check this year.

It goes without saying that the health board of Spartanburg will do its utmost, but this change of attitude of the taxpayer toward disease prevention is interesting and hopeful. It also emphasizes the obligation on the part of health departments to make good.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Hospital Dedicated.—The Hospital erected by the Order of the Eastern Star at the State Masonic Home near Birmingham, was dedicated with formal ceremonies, December 2.

Personal.—Dr. Daniel T. McCall has been elected president, and Dr. Harry T. Inge, vice-president of the Mobile City and County Tuberculosis Sanatorium, the organization of which was perfected December 20.——Dr. John Kimbrough, Jr., Mobile, has been commissioned First Lieutenant, M. C., Ala. N. G.

Health Campaign of State and Local Boards of Health.—Dr. Frank V. Meriwether, Gantt, of the State Board of Health, in cooperation with the Lawrence County Board of Health, conducted a health campaign in that county in December, giving stereopticon lectures on typhoid, pellagra and hookworm and a free examination followed by free treatment of hookworm. A large number attended the lectures and took advantage of the treatment.

ILLINOIS

Transfer Insane to New State Hospital.—Thirty-five patients have been transferred from the Anna State Hospital to the new Alton State Hospital, and are quartered in a farm house which has been remodeled and fitted for that purpose.

All Things in Common.—It is reported from Macomb that the physicians of that city have rented a portion of an office building and are attempting to work on a cooperation basis, the instruments of each to be of service to others. They will also place the knowledge of each at the disposal of others, and patients will enjoy the advice and consultation of all, at no additional expense.

Personal.—Dr. Lemuel B. Short, health commissioner of East St. Louis, has also been appointed city physician.——Dr. Harry O. Collins has been appointed a member of the staff of St. Mary's Hospital, Quincy.——Dr. Otis Johnston, Quincy, fell on the ice, December 30, spraining his right ankle.——Dr. Alden E. Smith, Freeport, has been elected president and Dr. Sara E. Hewetson, Freeport, secretary, of the Stephenson County Antituberculosis League.——Dr. William G. Schmidt, Quincy, is reported to be critically ill.

Chicago

Medical Women Hear Coroner.—At a meeting of the Medical Women's Club, January 13, Coroner Peter M. Hoffman of Cook County delivered an address on "Public Safety."

Tuberculosis Advisory Committee Appointed.—On December 21, the president of the Board of Cook County Commissioners appointed the following advisory committee for the tuberculosis hospitals of Cook County: Drs. Theodore B. Sachs, Ethan A. Gray and Stephen R. Pietrowicz, and Mr. James Minnick.

To Study Defective Children.—At a meeting of the Board of Education, January 6, a committee was appointed, consisting of Drs. Peter C. Clemensen, O. F. Warning and Stephen R. Pietrowicz, to cooperate with Daniel P. MacMillan, director of the Child Study and Educational Research Department, to assist that department in the scientific study of the defective child.

Personal.—On January 7 twenty-five members of the staff of the Illinois Charitable Eye and Ear Infirmary, Chicago, gave a farewell dinner to Charles T. Gerrard, superintendent of the institution for the last sixteen years. Dr. Norval H. Pierce presided as toastmaster, and a silver loving-cup was presented to Mr. Gerrard by Alderman Dr. Willis O. Nance. Dr. James L. O'Connor has succeeded Mr. Gerrard as superintendent of the institution.——The Illinois Society of St. Andrew, at its annual meeting January 8, reelected Dr. John A. McGill president.

INDIANA

Hospital Incorporated.—The Indianapolis Eye, Ear, Nose and Throat Hospital was incorporated with a capital stock of $10,000. It is the outgrowth of a medical clinic which has been conducted for some time at the Hillside Christian Church.

Tuberculosis Foes Meet.—At the annual meeting of the Fort Wayne Antituberculosis Society, December 30, Dr. Eric A. Crull was reelected medical director and Drs. Charles G. Beall, Adam L. Schneider, Hermann A. Duemling, Eric A. Crull and Edmund M. Van Buskirk were elected members of the executive committee.

Whole-Time Health Officers.—The Indiana Federation of Clubs has petitioned the state legislature to pass a law requiring all health officers to be trained officials, giving their entire time to the work and providing that they be placed under civil service rules so that they may not be removed under political reasons.

Personal.—Dr. Brown S. McClintic, Peru, on duty with the Russian Red Cross, is now stationed at Kiev.——Dr. Norman E. Jobes, former superintendent of the Indianapolis City Hospital, has been given a verdict by the appellate court for $2,450 against the city of Indianapolis for services rendered as superintendent for the Hospital for Contagious Diseases.——Dr. Charles Bowman, New Albany, is reported to be critically ill at his home.——Dr. Louis Burckhardt has resigned as a member of the attending staff of the Indianapolis City Hospital.——Dr. Henry W. Gante, Anderson, who has been seriously ill with diphtheria, is reported to be improving.

KENTUCKY

Medical Club Incorporates.—The Louisville Medical Club filled out articles of incorporation December 11, and the officers named on the papers are: Drs. Peter S. Ganz, president; Michael Casper, vice-president; Arthur M. Barnett, secretary, and Bernard J. Lammers, treasurer, all of Louisville.

Thousands for Sanatorium.—The executive committee of the Louisville Antituberculosis Association reports that by its sale of Christmas seals in the interest of Hazelwood Sanatorium, $3,000 has already been received and it is believed that $2,000 additional will be raised before the conclusion of the campaign.

Personal.—Dr. Milton Board, Louisville, has been appointed registrar of vital statistics of the Louisville district, succeeding Dr. William E. Gary.——Drs. Lewis S. McMurtry, Louisville; Hugh N. Leavell, Louisville, and William E. Gardner, Lakeland, have been appointed members of the Jefferson County Board of Health.——Dr. Jesse I. Whittenberg, Louisville, has been elected health officer of Jefferson County, vice Dr. Benjamin W. Smock, deceased.——Dr. John M. Morris, Louisville, fractured his right arm January 1, while cranking his automobile.——Dr. Richard B. Cassady, LaGrange, is reported to be seriously ill with jaundice.

MAINE

School Medical Inspection.—During the first year of the act providing for the appointment of school physicians, 49 were employed and 87,000 children were given the tests as to sight and hearing. During 1914 examinations were more generally and effectively given and 114,529 children were given the same tests with the result that 11,980 were found to have defective vision, 44 being totally blind and 3,673 having defective hearing. During the year, 52 school physicians were employed, at an average cost of less than $100.

Physicians in State Legislature.—Twelve physicians of the state have been elected members of the seventy-seventh legislature. Of these, five are in the Senate, Drs. Aaron J. Fulton, Blaine; Alonzo M. Garcelon, Lewiston; Harry M. Multon, Cumberland Center; G. Gilmore Weld, Oldtown, and Wallace N. Price, Richmond. The medical members of the house of representatives are Drs. Richard T. Leader, Lewiston; Albert W. Plummer, Lisbon Falls; Augustine B. Libby, Smyrna Mills; Isaac D. Harper, South Windham; Elmer J. Morrison, Bar Harbor; Cecil E. Wasgatt, Deer Isle, and Adelbert Millett; Belfast.

MASSACHUSETTS

Harvard to Have Hospital Unit in Paris.—Harvard University has raised about $10,000 to equip and maintain a hospital unit at the American Hospital, Paris, to assist in caring for the wounded in the war. The unit will consist of two resident surgeons, three interns, two operating nurses and two anesthetists.

Tuberculosis Hospital Dedicated.—On January 2 the Carter Memorial Tuberculosis Hospital at Lancaster erected according to the wishes of Miss M. Elizabeth Carter in memory of Charles M. and Martha Howard Thurston Carter, was formally dedicated and the keys were presented to the Clinton Hospital Association. Addresses were made by Governor Walsh and Dr. Walter P. Bowers, Clinton. After the exercises the hospital was opened for inspection by the public.

Mental Hygiene Society Organized.—The Massachusetts Society for Mental Hygiene has been organized with the aim of educating the people as to the real cause of the disease and to give instructions in plain and tested measures for the prevention of mental diseases, the officers of which are: Hon. Harvey H. Baker, Boston, president; Dr. Walter E. Fernald, Waverly, vice-president; Dr. Charles E. Thompson, Gardner, secretary; John Keran, Boston, treasurer, and Dr. Frankwood E. Williams, Boston, executive secretary.

Personal.—Dr. Richard P. Strong, professor of tropical medicine in Harvard Medical School, has been appointed director of hospitals, laboratories and research work of the United Fruit Company. His new field of labor will be in the West Indies and Central and South America.——Dr. John J. Dowling, Boston, has been appointed superintendent of the Boston City Hospital, to take effect January 31, vice John H. McCollom, Boston, resigned. Dr. McCollom has been connected with the hospital for 46 years.——Dr. William J. Sullivan has been appointed city physician of Lawrence, vice Dr. George W. Dow——Dr. Charles J. Downey, Springfield, has been named as trustee of the state hospitals for consumptives.

Hospital Efficiency.—On January 6 a meeting for the discussion of hospital efficiency was held at the Boston Medical Library under the auspices of the surgical section of the Suffolk District Medical Society. The general subject of discussion was on whom the responsibility for medical and surgical efficiency, in a charitable hospital, should rest and the general consensus of opinion appeared to be that the responsibility would be vested in a committee composed of representatives of all departments, namely, the trustees, the staff, and the administration. The subject was discussed by Mr. Frank B. Gilbreth, Providence, R. I., from the standpoint of an efficiency expert; by Dr. Robert L. Dickinson, surgeon and gynecologist to the Brooklyn Hospital, from the standpoint of a hospital surgeon; by Dr. Herbert B. Howard, superintendent of the Peter Bent Brigham Hospital, from the standpoint of a hospital superintendent; by Drs. Walter Wesselhoeft of the Massachusetts Homeopathic Hospital and Joel E. Goldthwait of the Peter Bent Brigham Hospital, from the standpoint of hospital trustees, and by Major James M. Curley, from the standpoint of a public servant.

MISSOURI

Centralia Physicians Organize.—The Centralia Medical Association was organized, December 17, with Dr. William A. McAllister, president, and Dr. Orpheus B. Mayes, secretary, both of Centralia.

Colored Medical Association Incorporated.—A pro forma decree of incorporation has been issued at St. Joseph to the Missouri Pan Medical Association, whose officers are: Dr. J. E. Perry, Kansas City, president; Dr. R. Leon Hall, secretary; and Dr. William S. Carrion, treasurer.

Physicians' Club Leases Quarters.—The recently organized Physicians' Club of Springfield has leased space on the third floor of the Woodworth Building as its headquarters. There is one large room, which will seat more than 100 persons, where the meetings of the club will be held, and a smaller room, which will be used as a library and rest room. It is the purpose of the club to invite the Greene County Medical Society to meet with it.

Advise Reorganization of Hospital.—The special committee of the Jackson County Medical Society, consisting of Drs. Edward W. Schauffler, Francis M. McCallum and Andrew W. McAlester, Jr., all of Kansas City, appointed to investigate conditions of the General Hospital, made its report January 4, advising a thorough reorganization, closing with the following words: "This committee begs to be discharged until such time as the medical profession determines to take a positive stand for right and justice to itself and to the public in the administration of this public institution."

Personal.—Dr. Walter S. Wheeler, health commissioner of Kansas City, underwent operation at Wesley Hospital, January 4, and is reported to be doing well.——Dr. George A. Nash, Maryville, who was operated on December 14 for appendicitis, is said still to be in a serious condition.——Dr. William H. Hays, Hannibal, whose leg was amputated as the result of a gunshot wound while on a hunting expedition, is now out of danger.——Dr. Stephen D. Reynolds, Gower, has been appointed a member of the staff of the State Hospital No. 3, Nevada, vice Dr. Charles B. Simcoe, deceased.

The Missouri Foundation for Health Conservation, St. Joseph, Mo.—On December 21, the secretary of state of Missouri issued articles of incorporation to "The Missouri Foundation for Health Conservation," the purposes of which are "the conservation of health and the prevention of disease to the end that human efficiency may be increased and human suffering prevented." Its purposes are to be secured by any means "that demands of time or of science may require." The first activity undertaken will be a medical laboratory to be established at St. Joseph, with its tributary population of 1,000,000. It is intended that this institution shall be a clearing-house where all doctors living in the country tributary to St. Joseph may send specimens from patients for analysis and get prompt returns. The work will be financed by fees, donations, subscriptions and bequests, its aims being scientific, social and benevolent and not commercial. In addition to the medical laboratory, other activities for health conservation will be inaugurated. The secretary of the foundation is Dr. Daniel Morton, St. Joseph, and the members of the board of control are prominent citizens of St. Joseph and the state.

St. Louis

Auditorium Dedicated.—The Auditorium of the St. Louis Medical Society has been rededicated as the Hugo W. Bartscher Memorial Hall, on account of the bequest made to the society by the will of Mrs. Bartscher. An oil painting of Dr. Bartscher will be hung in the hall.

Hospital Quarantined.—On account of eight cases of small-pox at the Lutheran Hospital, the institution has been placed under quarantine. The inmates have been ordered to be vaccinated. Six persons suffering from small-pox were removed from the institution to the Koch Hospital, January 6.

Personal.—Dr. Malcolm A. Bliss, while crossing the street January 6, was knocked down by a motorcycle and seriously injured.——Dr. Leo Loeb, pathologist to the Barnard Free Skin and Cancer Hospital, has resigned, to take effect April 1.——Fire in the house of Dr. William E. Sauer, December 14, did damage to the extent of about $1,000.——Dr. Percy Carroll, a member of the staff of the City Hospital, was operated on for appendicitis, December 21.——Dr. John Young Brown bought a 30-acre tract near Baldwin, Mo., as a site for his country home.

NEW YORK

A Primer for Mothers.—The Buffalo Department of Health has issued for free distribution a four-page "Primer for Mothers," giving general rules for the management of infants.

Scarlet Fever in Children's Home.—An outbreak of scarlet fever is reported from the Cripples Home of St. Giles near Garden City, L. I. The cases are mild and there is little apprehension of serious developments.

Deporting Alien Insane.—Although the work of deporting alien insane has been greatly hampered by the war, there were returned to their native countries either at the expense of the state or of their friends last year 426 alien insane, who had resided in this country for a period of over three years, and who were not deportable under the provision of the immigration law. The number returned to Europe during the previous year was 486.

New York City

New Maternity Hospital Opened.—The Bronx Maternity Hospital Clinic was formally opened January 4 and is now ready for the reception of patients. This is the first maternity hospital established in the Bronx and is entirely the result of private charity.

Harvey Society Lecture.—The sixth lecture of the Harvey Society series given at the New York Academy of Medicine, January 16, is by Dr. Edward R. Baldwin of the Adirondack Cottage Sanatorium, Saranac Lake, on "Immunity in Tuberculosis with Special Reference to Racial and Clinical Manifestations."

Personal.—Dr. James M. Wicks of Jamaica, L. I., who has been working for three months in the American Ambulance Hospital at Paris, has returned to this country.——Dr. Charles F. Stokes, Washington, D. C., Surgeon-General of the Navy under the Roosevelt and Taft administrations, has been appointed superintendent of the city farm colony for inebriates in Orange County.

Drug Arrests.—A special report made to Police Commissioner Woods shows that in 1914, 1,950 arrests were made by the special squad which was organized to break up the illicit sales and distribution of drugs and narcotics. It is said that in 1913 there were 511 arrests on similar charges. In 1914 there were 947 convictions secured as against 256 in 1913. The report is said to show a great improvement over previous conditions.

Hungry Schoolchildren to Be Fed.—Beginning January 11, twenty-four restaurants will be started in the public schools of the greater city. Superintendent Maxwell announces that he has at present $9,000 with which to start the project, and Andrew Carnegie has promised $2,000 provided an additional $10,000 is raised. A portion of any article on the menu will be furnished to a pupil at one cent and free tickets will be distributed to those unable to pay.

New York Leads in Tuberculosis Fight.—The annual statement of the National Association for the Study and Prevention of Tuberculosis shows that during the past year more than $20,500,000 was spent in the tuberculosis campaign in this country, and that New York has spent more during the past year than any other two states. Illinois has second place. The statement also shows that 66 per cent. of the money was derived from public funds, either federal, state, county or municipal, while the remainder was contributed by private philanthropy.

Academy of Medicine Meeting.—The annual meeting of the Academy of Medicine was held on January 7, at which time the reports of the officers and committees of the academy were presented. The treasurer's report shows the academy in a thriving condition financially. The trust funds now total $687,090. The most interesting report was that of the public health, hospital and budget committee which shows the wide variety of activities in which the academy is interested. The executive session was followed by the retirement of the president, Dr. William M. Polk and the inauguration of his successor, Dr. Walter B. James.

NORTH CAROLINA

Nurses' Home.—The Presbyterian Hospital, Charlotte, has leased a building adjoining the hospital for use as a nurses' home.

Free Clinic.—A free clinic has been established at the Spencer Sanitarium, Winston-Salem, with the cooperation of fifteen or twenty physicians of the city. The clinic will be opened from 12 to 2 p. m., Mondays and Saturdays being set aside for colored patients.

Personal.—Drs. George W. Purefoy and Marshall H. Fletcher have been reappointed members of the Buncombe County Board of Health.——Dr. Thomas W. M. Long, Roanoke Rapids, has been appointed a director of the Eastern Hospital for the Insane, Raleigh.

New Buildings for School for Feeble-Minded.—The trustees of the North Carolina School for Feeble-Minded, at the annual meeting held in Kington, recommended an extension of the institution including three buildings and involving an expenditure of $120,000. Dr. C. B. McNairy, was reelected superintendent of the school.

Whole-Time Health Officers.—At the January meeting of the board of aldermen of Winston-Salem, it was voted to organize a complete health department for the city and to secure the services of a competent whole-time health officer. ——The commissioners of Pitt County, at the January meeting, held in Greenville, voted to establish a whole-time county health officer.

PENNSYLVANIA

Personal.—Dr. S. Albert Blair, Chambersburg, has been appointed chief surgeon of the Hospital for Diseases of the Eye, Ear, Nose and Throat, recently opened at Scranton.——Dr. Henson F. Tomb, Johnstown, who was operated on December 23, at the Memorial Hospital, Johnstown, for cholecystitis, is reported to be making good progress toward recovery.

Decrease in Contagious Diseases.—Communicable diseases in Pennsylvania during 1914 were 50,000 less than the number in 1913, according to a statement issued December 31 by Dr. Samuel G. Dixon, commissioner of health. Typhoid fever decreased 70 per cent. The general death-rate was only 14.1 per 1,000 inhabitants. Tuberculosis was reduced, and cancer was the only disease which showed an increase.

Vindication of Physicians.—In a suit brought by Mrs. Ella E. Caldwell of Indiana, against Drs. William A. and George E. Simpson of the same town, alleging that they fraudulently, knowing the plaintiff was not insane, signed an insanity certificate committing her to the Pennsylvania Hospital for the Insane, Philadelphia, the trial judge gave a strong charge in favor of the defendants, who were promptly acquitted.

Philadelphia

Rush Society Lecture.—A change has been found necessary in the program for the Ninth Rush Society Lecture, January 23 next, as Professor Umber of Berlin has found he would be unable to come, because of the war. Dr. Lafayette B. Mendel of Yale University will speak on "Nutrition and Growth."

Personal.—Dr. Richard H. Harte, director of public health and charities, resigned January 6.——Dr. S. Lewis Ziegler has been appointed director of public health charities to succeed Dr. Harte.——Dr. Charles W. Burr has been appointed consulting neurologist to the Municipal Hospital. ——Dr. Howard Kennedy Hill was reelected chairman of the track committee of the University of Pennsylvania, December 21.

Graduate Nurses to Help War Hospitals.—Graduate nurses, meeting at the call of chairman of the Red Cross division of the Emergency Aid Commission, organized December 8 a corps of workers for the manufacture of bandages and other surgical supplies for use on European battle fields.——The "Made In America" Bazaar Committee has $4,000 to turn over to the Red Cross division and a like sum to the Belgium Relief division.

School for Tuberculous Children Open.—Twenty children suffering from symptoms of tuberculosis began school in an open air class-room provided by the board of education, January 4. A small building on the Girard School property at Eighteenth and Snyder Avenue has been thoroughly repaired and improved by the department of buildings. The building is provided and equipped with a kitchen and dining room and philanthropic agencies have been asked to help to start a lunch room. The children will be expected to pay but none will be refused food.

Wet-Nursing Bureau.—The Babies' Welfare Association has organized a central bureau of information concerning all agencies in the city which are conducted for the welfare of infants. Among its other activities the association is attempting to put into operation a plan for the centralization of wet-nursing in the Bureau of Health. The central office has a registry for wet nurses desiring positions, as well as one for physicians who wish the services of wet nurses. Every candidate for wet-nursing is required to present a certificate of general physical fitness. No candidate is considered available until the Wassermann test has been submitted to and the result of the examination has been returned negative.

GENERAL

Revenue Cutters to Carry Surgeons.—An order has been issued by the Secretary of the Treasury that each revenue cutter engaged in winter cruising on the Atlantic Coast, shall carry a surgeon of the Public Health Service. This action is in addition to that noted last week in The Journal.

of the equipment of the Revenue Cutter *Androscoggin* as a hospital for sick and injured fishermen.

Memorial for Theobald Smith.—On account of the impending severance of his connection with Harvard University after a service of twenty years, the colleagues of Professor Theobald Smith are arranging for a permanent memorial. It is proposed to present a bas-relief of Professor Smith to the medical school and reductions of this will be made and presented to each donor of $10 or more to the fund. A complimentary dinner is to be given to Professor Smith on April 17, the cost of which will be $5 per cover. Subscriptions should be sent to Dr. Marshall Fabyan, 379 Commonwealth Avenue, Boston, not later than February 10.

Bequests and Donations.—The following bequests and donations have recently been announced:

The Episcopal Hospital, Philadelphia, $10,000 by the will of John Dobson.

Germantown Dispensary, $2,100 by the will of Margaret McLain.

Chestnut Hill Hospital, Philadelphia, $1,000; Howard Hospital, Philadelphia, $22,000 by the will of Anna F. Brush.

Harvard Medical School, $50,000 for the endowment of a chair of gynecology to be known as the William H. Baker Chair of Gynecology, by the will of Dr. William H. Baker, of Waltham, in the event of Harvard Medical School not desiring to accept the bequest under the conditions named, it is to be turned over to the Free Hospital for Women, Brookline.

Philadelphia County Medical Society, for its beneficent activities, $5,000 by the will of Dr. Louis A. Duhring.

New York Infirmary for Women and Children, $6,000; State Charities Aid Association, $25,000 by the will of Grace Hoadley Dodge.

Plague Work in New Orleans.—Up to December 26, the public health officials, engaged in work against the bubonic plague in New Orleans, report that 205,872 rodents had been captured, 178,421 of which had been examined. Of these, 213 were found to be infected. The infected rats by species were as follows: Mus Rattus, 11; Mus Musculus, 1; Mus Alexandrinus, 5, and Mus Norvegicus, 196.——During the week ended January 2, 17 vessels were fumigated with sulphur; 14 with carbon monoxid and 2 with hydrocyanic gas; 26 clean bills of health and 12 foul bills of health were issued; 237 cars were inspected and 9,359 rats were trapped; 5,092 rodents were examined out of 9,481 received at the laboratory and of these, 43 were suspicious and in 6 cases the diagnosis of plague was confirmed. Up to the present time 219 plague rats have been discovered.

Gorgas Medal Established.—The Gorgas Medal to be given yearly in honor of Surgeon-General Gorgas has been established by the Medical Reserve Corps, U. S. Army, New York State Division. This medal is open to competition to members of the Medical Corps of the United States Army, the Medical Reserve Corps of the United States Army and to members of the medical corps of the organized militia. Officers may submit papers on any subject of a medico-military nature. General Gorgas has appointed the following board of officers to act on papers submitted: Colonel Charles Richard, Lieut. Col. Champe C. McCulloch, Jr., and Major Eugene R. Whitmore, Army Medical Corps. These officers are members of the faculty of the Army Medical School and will have sole authority to appoint the time that papers are to be submitted, and to pass on the merits of the papers. All inquiries should be addressed to one of these officers.

Inspection of Schoolchildren in Canal Zone.—District physicians have been instructed to follow up the cases of all children found infected in the physical examination recently given to pupils in the Canal Zone public schools. After the expiration of thirty days, the physicians are to advise the chief health officer what percentage of those previously found infected report for treatment, together with results obtained. Teachers have been requested to inform the district physician when pupils have been absent for unknown causes, in which case the physician will visit the homes of pupils and institute such measures which may be deemed necessary.——District physicians, together with the health officers of Panama and Cristobal-Colon, have been instructed to visit all schools in their respective districts and to vaccinate all pupils who have not had small-pox, or who have not been successfully vaccinated within the last five years, issuing certificates to all pupils and teachers whom they vaccinate.

State Child Welfare Exhibits.—Plans are under consideration involving the cooperation of the state departments of health, charities, education, labor, etc., for the holding of child welfare exhibits, under the direction of the extension divisions of the state universities. Among the states having the plan under advisement are Indiana, Arkansas and Oklahoma, and Wisconsin, Missouri, Nebraska, Kansas, Iowa and Minnesota have decided on exhibits and are awaiting organizers from the National Child Welfare Exhibit Association. The exhibits would comprise the propaganda work of the various state departments named as it affects children, with the object of showing constructively what is being done for the children by the various states and what it is necessary to do. In the past few years successful exhibits have been held in the larger cities, and the idea has been taken up by various cities abroad. The experience of the United States was called on in preparing these latter exhibits. Charles F. Powlison, 200 Fifth Avenue, New York City, is secretary of the National Child Welfare Exhibit Association. He seeks correspondence with and cooperation of experts in various lines of child-helping.

Conferences on Medical Education, Legislation and Licensure.—During the three days February 15, 16 and 17, there will be held at the Congress Hotel, Chicago, a series of conferences on medical education, medical legislation and the licensing of physicians. On Monday, February 15, the Council on Health and Public Instruction of the American Medical Association will hold its regular annual conference. The program follows:

1. Call to order by the Chairman, Dr. Henry B. Favill.
2. Chairman's Address.
3. Secretary's Report.
4. Report of the Committee on Medical Expert Testimony. Prof. E. R. Keedy.
   Discussion:
   Dr. Harold N. Moyer.
   Prof. John H. Wigmore, Chicago.
   Judge Albert C. Barnes, Chicago.
   Judge Harry Olsen, Chicago.
5. Presentation and Discussion of Bill for the Prevention of Ophthalmia Neonatorum.
6. Model Bill on State Public Health Organization. Dr. Henry M. Bracken, St. Paul.
   Discussion:
   Dr. J. N. Hurty, Indianapolis, Ind., Secretary State Board of Health.
   Dr. S. J. Crumbine, Topeka, Kan., Secretary State Board of Health.
   Dr. George B. Young, Commissioner of Health, Chicago.
   Prof. Charles Henderson, University of Chicago.
   President George Vincent, Minnesota State University.
7. State Regulation of Those who Treat the Sick. Hon. G. H. Hodges, Governor of Kansas.
   Discussion:
   Dr. George H. Cook, Natick, Mass., President Conference of State Examining and Licensing Boards.
   Mr. A. C. Umbreit, Milwaukee.
   Dr. A. D. Bevan, Chicago, Chairman Council on Medical Education.

On Tuesday, February 16, the Council on Medical Education will hold its eleventh annual conference. The program follows:

1. Opening of Conference by the Chairman, Dr. Arthur Dean Bevan, Chicago.
2. Report of the Secretary, Dr. N. P. Colwell, Chicago.
3. Report of the Committee on the Reorganization of Clinical Teaching, by the Chairman, Dr. Victor C. Vaughan, President, American Medical Association, Ann Arbor, Mich.
4. Report of the Committee on Graduate Medical Instruction, by the Chairman, Dr. Horace D. Arnold, Dean of the Graduate School of Medicine of Harvard University, Boston, Mass.
   Discussion: Dr. James F. McKernon, President of the Faculty of the New York Post-Graduate Medical School, New York City.
5. Symposium on Higher Degrees in Medicine.
   (a) "The University and Higher Degrees in Medicine," by President George E. Vincent of the University of Minnesota, Minneapolis, Minn.
   Discussion: President Harry Pratt Judson of the University of Chicago, Chicago.
   (b) "Courses and Degrees in Public Health Work," by Dr. Milton J. Rosenau, Professor of Preventive Medicine and Hygiene, Harvard University Medical School, Boston, Mass.
   Discussion from the Engineer's Standpoint—Mr. M. C. Hoad, Professor of Sanitary Engineering, University of Michigan, Ann Arbor, Mich.
   (c) "Preparation of Specialists in Ophthalmology and Oto-Laryngology," by Dr. Frank C. Todd, Professor of Diseases of the Eye, Ear, Nose and Throat, University of Minnesota, Medical School, Minneapolis, Minn.
   Discussion—Dr. Edward Jackson, Professor of Ophthalmology, University of Colorado, School of Medicine, Denver, Colo.
   (d) "Higher Preparation in Surgery," by Dr. John M. T. Finney, Professor of Clinical Surgery, Johns Hopkins University, Medical Department, Baltimore, Md.
6. "A Scheme Facilitating More General Licensure," by Dr. W. L. Rodman, President-Elect of the American Medical Association, Philadelphia, Pa.

On Wednesday, February 17, there will be a joint conference of the Federation of State Medical Boards of the United States and the Association of American Medical Colleges. The program follows:

1. "Some Thoughts on the Work of the State Board of Medical Examiners," John Huston Finley, LL.D., Commissioner Education, State of New York.

2. "Classification of Medical Colleges," Henry S. Pritchett, President Carnegie Foundation.
3. "Fallacies in the Argument Against Full Time Clinical Instructors," Major J. Seelig, St. Louis, Mo.
4. "Minimum Expense of Maintenance of an Acceptable Medical College," Laboratory Department, F. C. Waite; Clinical Department, John L. Heffron.
5. Address of President (subject not announced), Isadore Dyer, New Orleans, La.

FOREIGN

The Prohibition of Absinthe Not Enforced in France.—The recent decree forbidding the sale of absinthe in France failed to forbid renewal of supplies. The saloon-keepers are thus able to keep their stock replenished, and the daily paper, *le Temps*, hints that the clandestine consumption of absinthe is being encouraged by the administration. At a recent meeting of the Société méd. des hôp., a vigorous protest was unanimously voted calling on the authorities to enforce "the regulations against this redoubtable foe in our midst," and make them definitely prohibitive.

Deaths in the Profession Abroad.—The cable brings word of the death of Klaus Hanssen, physician in chief of the Bergen Public Hospital, Bergen, Norway, and leader in the campaign against tuberculosis, aged 71.——S. Gottschalk, privat-docent of gynecology and obstetrics at the University of Berlin, founder of a private clinic, and author of numerous articles on chorio-epithelioma, etc., aged 54.——E. Mairinger and J. Zuckermann, both of Vienna.——The death is also reported of Wilhelm Hittorf, professor of physics at the University of Münster, and not a member of the profession, but Hittorf's work on the cathode rays blazed the way for the discovery of the Roentgen rays.

From Bahia, Brazil.—The professor of histology and chief of one medical clinic connected with the University of Bahia, Prof. Pacifico Pereira, for nearly half a century has been a leading spirit in medical education and public hygiene. He founded in 1866 the *Gazeta Medica de Bahia* and has edited it since. On the occasion of his recent retirement from his chair on account of having reached the age limit, an ovation was tendered him, a festival under the auspices of the medical department, with representatives from scientific societies throughout Brazil and beyond.——The University of Bahia was founded in 1808 but still has only the "faculty of medicine, surgery and pharmacy" as when first founded. It has forty-two professors besides over a dozen assistants, and there were 730 students enrolled in 1913.

Prizes Distributed by the Paris Academy of Medicine.—The Académie de Médecine is the medical department of the National Institute of France, and it has seventy-three endowments for prizes to be awarded in the medical sciences. Of the forty-three available in 1914 and which have just been distributed, fourteen could not be awarded as in the case of the Audiffred prize which offers a capital representing an annual income of $4,800 for a "sovereign remedy against tuberculosis." Of the six articles offered in competition, only one was given "encouragement" with an award of $200 for research on the tubercle bacillus. The Roussilhe prize was awarded for the first time. This is a triennial prize of $2,000 for the "greatest progress in dermatology for the relief or cure of diseases of the skin." Competition is open to all scientists, French or foreign. The prize was given to Professor Gougerot of Paris for his works on skin diseases, especially his research on sporotrichosis. The prize of $200 for the "most meritorious medical student" was given to Mademoiselle Romme. The only one of the prizes ($240) which went out of France was given to H. Fredericq of the University of Liége for his research on the comparative physiology of the circulation. All of the prizes except seven are open to foreign competition. The Académie prize of $200 is offered in 1915 for the best work on diabetic coma; in 1916, on hemoglobinuria; in 1917, on paralysis of the recurrent nerve. The issue of the *Bulletin*, Dec. 15, 1914, contains the conditions and details of the entire list of prizes offered in the next three years.

WAR NOTES

Losses Among the German Medical Officers.—The *Medizinische Klinik*, December 13, says that of the regular army and navy medical corps only one physician has been reported as disabled from sickness since the war began; forty have been severely and 112 slightly wounded; sixty-five have fallen on the field; seventy-eight are missing, and forty-six are known to be in captivity.

Price of Opium in Germany.—Prof. J. Pohl, in an address at Breslau, November 20, commented on the rise in price of opium, saying that the wholesale rate in July was 44 marks and, at the time of speaking, 80 marks per kilogram. This is nearly $37 a pound. He added that this high price was due not only to the fact that importation had ceased, but also to the probability of the next harvest falling short.

Italian Red Cross Hospital at Paris.—There are 100 beds in the hospital organized by the Italian colony in Paris to receive wounded soldiers. The three pavilions form an annex to the Val-de-Grâce military hospital. They were nearly new private houses that have been transformed into a well-equipped modern hospital. The *Policlinico* states that all of the tetanus patients treated there by the Baccelli phenol method recovered.

The Iron Cross for German Physicians.—The *Berliner klinische Wochenschrift* of December 14 states that the Iron Cross has been conferred by the German authorities on 1,500 physicians at the front. The profession rejoices at this appreciation of the devotion of the medical men with the army, especially as it has been less than a year since the medical officers were placed on the same footing in every respect as the other officers in the army and navy.

Aid for Belgian Profession.—The report of the treasurer, Dr. F. F. Simpson, of the committee of American physicians for the relief of the Belgian profession, for the week ending Jan. 9, 1915, lists the following contributions:

E. G. M.	$ 10.00
L. M. W.	5.00
A. T.	10.00
J. G. R. M.	25.00
J. C. T.	25.00
L. C. F.	10.15
E. T. F.	10.15
F. W. S.	10.00
G. L. H.	25.00
G. E. L.	5.00
E. E. K.	10.00
A. M. C. O.	100.00
D. S. M.	10.00
C. M. B.	1.00
M. C. M. S.	25.00
H. M. S.	10 00
E. H. M.	5.00
Total	$296.30
Disbursements	None
Contributions previously reported	$662.50
Grand Total	$958 80

LONDON LETTER

London, Dec. 24, 1914.

The War

THE RED CROSS HOSPITALS IN FRANCE

Sir Frederick Treves, who has returned from a visit of inspection of the Red Cross hospitals in France, has submitted his report to the British Red Cross Society. He speaks highly of the fleet of motor ambulances provided by the society. He thinks it represents the most valuable service ever rendered by voluntary aid to the army medical department. "These ambulances are everywhere. The majority are working at the front in convoys of various sizes. They are perfectly organized and equipped, and are always at work. When they come down with patients they return with stores for the wounded. In the saving of life, in the lessening of suffering, and in the securing of prompt surgical treatment for the wounded these ambulances have done a work the value of which can hardly be exaggerated." In addition to the motor ambulances, the society has many other cars which are of great service in dispatch work and the conveyance of goods. A large number of these have been lent to the society by generous owners. The chauffeur who drove Sir Frederick Treves to Le Touquet was Mr. Kennerley Rumford, the famous singer. Another driver of note is the vicar of a quiet country parish in England.

SERIOUS SHORTAGE OF MEDICAL STUDENTS

The shortage of medical students in consequence of those who have gone to the front as combatants as well as dressers has been mentioned in a previous letter. Actual figures have now been furnished by Sir Donald Macalister, president of the General Medical Council, who finds that the decrease this year as compared with the preceding years is as follows:

first year students, 56 fewer; second year students, 237 fewer; third year students, 237 fewer; fourth year students, 211 fewer; fifth (and higher) year students, 300 fewer. The aggregate number of medical students now pursuing their curriculum with a view to qualification is thus about 1,000 smaller than in 1913. Unless many senior students return to their studies within the next few months, the result will be that the number of young qualified practitioners added yearly to the ranks of the profession will during the next few years be from 200 to 300 less than before. This is equivalent to a diminution of about 25 per cent. of the average number annually added to the medical register on qualification.

AMBULANCE BARGES

Sir Arthur Sloggett, the surgeon-general to the British forces at the front, has approved of and accepted a proposal made by Mr. Douglas Hall, M.P., to procure and equip four ambulance barges for immediate use on the waterways at the seat of war in France and Flanders. As this proposal will entail considerable expense, an appeal to the public for financial assistance has been made. The use of barges as a means of transport for wounded, and as actual hospitals, has been recently tried by Mr. Hall on the Seine, and has met the complete satisfaction of the French authorities and the great gratitude of the wounded for the tranquillity of this means of transport. The unit of four barges asked for in the first instance will be under the direction and control of the Royal Army Medical Corps, which will supply the army surgeons, nurses, and orderlies, and provide a complete floating hospital for 200 wounded

THE BOMBARDMENT OF THE EAST COAST

The figures of the casualties from the bombardment by German ships of the towns on the East Coast now reach 122 killed and 549 wounded.

DEATH OF AN EMINENT BELGIAN NEUROLOGIST IN ENGLAND

The universities of Oxford and Cambridge have freely given hospitality to the refugee Belgian professors and students. Among the former was the distinguished neurologist, Professor van Gehuchten of Louvain, who went to Cambridge, where he died. His work on the anatomy of the nervous system, on staining methods and chromatolysis, and on the olfactory and acoustic nerve tracts, is well known. He was a great clinician and teacher as well as a great investigator.

The Dangers of the Operator: Death of an Eminent Surgeon from Acute Septicemia

Mr. C. B. Lockwood, one of the most distinguished surgeons of the day, contracted acute septicemia after operating on a patient for appendicular peritonitis. The patient was in a grave condition and speed was necessary. Mr. Lockwood pricked his finger when inserting almost the last stitch. He was taken ill the same night and died five weeks later from septicemia. He was surgeon to St. Bartholomew's Hospital, and well known by his writings on aseptic surgery, hernia, varicocele, cancer of the breast, and most of all by his book on appendicitis, which has been described as the ablest exposition of the subject in English. He was not only a great surgeon, but also a master of terse and epigrammatic style. As an example may be taken his expression, "The man who does not pass flatus dies." It is one of the ironies of fate that a few years ago he read at one of the societies a paper on the unusual subject of the dangers to the operator.

PARIS LETTER

Paris, Dec. 17, 1914.

The War

NERVOUS TROUBLES AMONG WOUNDED SOLDIERS

My army service has permitted me to visit some of the military hospitals and also to examine a considerable number of convalescents after removal to their regimental stations. An especially striking feature is the frequency of nervous troubles, due most frequently to lesions of the nervous centers or of the peripheral nerve but sometimes of psychic origin. In view of the frequency of these complications, it has been decided to form special services under specialists in nervous diseases.

Dr. Paul Sollier of Boulogne-sur-Seine, who has just read a paper before the Académie de médecine on functional paralysis in wounded soldiers, distinguishes four varieties of these paralyses: (1) in emotional subjects, paralysis due to apprehension of the pain caused by moving limbs long kept in an unnatural attitude by apparatus or because of fibromuscular retractions; (2) paralysis due to mental representation (*a*) of movements with loss of the muscular sense and (*b*) of attitudes caused by prolonged disuse of the limbs; (3) paralysis due to a fixed idea of incurability, and (4) paralysis due to hysteric contracture.

Wounds of the nerves of the limbs due to bullets or fragments of shells are frequent, the arms being affected as often as the legs. According to Dr. Henri Claude, who read a paper on this subject before the Société médicale des hôpitaux de Paris, these wounds manifest themselves especially by motor paralyses. The painful forms are rare. Anesthesias are exceptional and particularly characteristic of complete sections of the nerve. What is most frequently observed, even in apparently benign wounds in which the ball merely passes under the skin and heals after a very short period of suppuration, is the sheathing of the nerve in a growth of fibrous tissue which constantly compresses it more closely. The proliferation of this sclerotic tissue causes late paralyses even in cases in which the projectile does not touch the nerve. In such cases operation to liberate the nerve and to surround it with healthy tissue should be performed almost always as soon as suppuration and acute inflammatory reaction have ceased. Mechanotherapy and electrotherapy are indispensable adjuncts of the surgical cure of such cases. From the diagnostic point of view, it is interesting to note that the abolition of the Achilles tendon reflex and of the knee-jerk are early and trustworthy signs of lesions of the sciatic and crural nerves. Investigation of these reflexes is especially useful in subjects inclined to simulation or exaggeration.

Dr. Mauclaire has reported to the Société de chirurgie several cases of motor troubles of psychic origin, taking the form either of paralysis or of contracture, in wounded soldiers whose nervous system had been greatly shaken.

WOUNDS IN BATTLE

Dr. Hartmann of the Faculté de médecine de Paris, who has recently had occasion to observe thousands and to treat hundreds of wounded soldiers, has recently summed up the results of his experience before the Académie de médecine. Of the total number of wounds, those due to artillery projectiles (balls, fragments of shells and of shrapnel) form a large proportion. Out of 268 cases in which the origin of the wound could be determined, 169 were caused by artillery projectiles and 99 by bullets. The frequency of fractures was great—112 cases of fracture out of 311 wounds. In general, these fractures are distinguished from those seen in civil practice by the presence of numerous fragments of bone, by the slight tendency to displacement and by the fact that in limbs with two bones, the lesion is generally limited to one bone. To avoid tetanus, Hartmann recommends that, without regard to the distinction between soiled wounds with fracture and those without fracture or soiling, preventive injection of anti-tetanus serum be practiced in all wounded as soon as possible. To prevent gaseous gangrene the interstitial injections of hydrogen peroxid recommended by Delorme (The Journal, Oct. 24, 1914, p. 1492) appear insufficient to Hartmann, who recommends liberal opening up of the wound and amputation if the limb is swollen throughout its thickness. In the prevention of gaseous gangrene it is important to remember that this complication never develops in wounds which are well opened up even when they are large. It occurs, on the other hand, in cases of small tortuous wounds deep in the tissues. Treatment, therefore, should consist of opening up the course of the projectile, removing all foreign bodies, draining from end to end, and irrigating with hydrogen peroxid.

At one of the last sessions of the Société de médecine de Paris, Dr. Maurice Cazin reported some interesting statistics comparing the results of early with late hospital treatment. In a group of 158 wounded men received at the hospital less than forty-eight hours after battle, all were cured, in spite of the serious character of many of the wounds. Among the wounded received in hospitals after four or five days of transportation in sanitary trains, on the other hand, the mortality in some hospitals reached 10 or 20 per cent. owing to infectious complications (gangrene and tetanus) which might have been avoided by suitable treatment if the patient had been placed in a hospital early. The objection to early hospital treatment of all wounded soldiers, even those not seriously injured, seems to be the fear of encumbering the hospitals near the battlefield. This might be avoided by selecting twice a week, or even daily, the patients who, after several days under observation with rest and hospital hygiene and care, are now fit to be removed. Thus men who are on the way to certain recovery and not, as at present, men whose condition is precarious would be removed by hundreds in the trains of evacuation.

EMETIN IN THE TREATMENT OF TRAUMATIC HEMOPTYSIS

In view of the antihemorrhagic properties of emetin in tuberculous hemoptysis, Drs. J. Dupont and J. Troisier decided to try this remedy in traumatic hemoptysis. In three patients with penetrating bullet wounds of the thorax, they gave subcutaneous injections of emetin hydrochlorid, the dose being 40 mg. The hemoptysis was arrested after one or two injections. Of course, emetin injections could not arrest severe vascular hemorrhages but the pulmonary hemorrhages of men who are capable of being transported appear amenable to this simple treatment. If necessary, the dose may be increased to 80 mg.

HOME COMFORTS FOR THE WOUNDED

The Foyer du Blessé has been founded under the patronage of the Assistance publique. The purpose is to bring to wounded soldiers in the hospitals of Paris all possible material comfort and mental consolation and distraction. The director of the Assistance publique has therefore granted the use of a hall in every hospital where this is possible. This hall will be furnished especially for the use of the wounded, who will find there games, books, periodicals, hot drinks, tobacco, letter-paper, a meeting-place and friends who will endeavor to take the place of the absent family and to render the patients all possible service. Two such halls have been in use from the beginning of the war at the Saint Antoine Hospital, and two new ones have just been inaugurated at the Lariboisière.

Deaths in the Profession

Dr. Léon Lereboullet, medical journalist, has just died. He was born in 1842 at Strasburg, where his father held the chair of zoology and comparative anatomy at the Faculté des sciences of that city. In 1873 he was appointed agrégé professor of clinical medicine at the Ecole d' application de médecine et de pharmacie militaires du Val-de-Grâce. In 1881, after publishing a series of articles on the health service of Tunis which attracted much attention, he secured from Jules Ferry, then prime minister, an investigation which finally brought about the autonomy of the health service in the army. Lereboullet was a collaborator of Dechambre from 1872 and finally succeeded him in the editorship of the Gazette hebdomadaire de médecine and of the Dictionnaire encyclopédique des sciences médicales in 100 volumes. Besides the numerous articles on the practice of medicine, on hygiene and ethics, that he published in these two collections, Lereboullet was the author, in collaboration with Mathias Duval, of a manual of microscopy applied to diagnosis and, in collaboration with Dechambre, of a handy dictionary of medical sciences. In 1890 Lereboullet was elected associate member of the Académie de médecine.

Dr. Charles Périer, president of the Académie de médecine, has just died suddenly, aged 78. His health appeared very robust and nothing foreshadowed his approaching death. He presided over the last sessions of the academy and took part in the discussions during the annual public session. He was elected a member of the academy in 1890 in the section of surgical pathology.

Method for Determining the Presence of the Bacillus Typhosus

At one of the last sessions of the Académie des sciences, Drs. Carnot and Weill-Hallé outlined a practical method for discovering the presence of the bacillus of Eberth in typhoid patients and carriers. Instead of looking for the germ as usual in the feces of the patients, Carnot and Weill-Hallé examine the bile, which is known to be an excellent culture medium for this bacillus. The subject to be examined takes 150 c.c. of olive-oil. An hour later the stomach is catheterized, furnishing a mixture of oil, bile and gastric mucus. After separation of the three substances, the bile is examined for the bacillus; often after passage through the incubator it furnishes a pure culture. The Einhorn tube may be used. After it has penetrated into the pylorus, an aspiration by means of a syringe adapted to the tube will remove the bile pure or mixed with pancreatic juice. This procedure furnishes an easy method of establishing the presence of the bacillus during the whole course of the disease and the convalescence. Carnot and Weill-Hallé have found it up to the eighty-sixth day after complete recovery.

BERLIN LETTER

Berlin, Dec. 8, 1914.

The War

WARM UNDERCLOTHING FOR THE SOLDIERS

It goes without saying that, as in all previous wars, the care of the authorities for the sanitary condition of the army has been considerably aided by private generosity. Up to the present the Red Cross has expended about $1,375,000 (5½ million marks) for these purposes, of which more than $500,000 (2 million marks) were given for clothing and equipment of those serving in the army as well as for their instruction and training, about $225,000 (900,000 marks) for the making of woolen goods and other presents, $175,000 (700,000 marks) for hospital trains, and $150,000 for the care of the relatives of soldiers who are at the front. But these efforts of the Red Cross are greatly exceeded by those which have been put forth by various societies and well-to-do citizens. As an example may be mentioned the fact that the "military committee for warm underclothing," formed at the suggestion of the empress, has already sent to the army woolen goods to the value of $3,750,000 (15 million marks). On a certain day of the week special "wool trains" are run regularly to the armies both of the West and of the East. The cargo of these trains frequently reaches a value of $500,000 (2 million marks). Lately wool blankets have been furnished for the troops, who must often lie all day in the firing trenches. From these facts it is quite evident that in many parts of the army a certain oversupply of woolen material has accumulated. Thus in a medical weekly, a staff surgeon confirms the fact that many soldiers suffer from an oversupply of underclothing. There was found, for instance, on a certain artilleryman the following "epithelium": An overcoat, an army coat, a drilling jacket, a woolen vest, two woolen shirts and one linen shirt. As these goods cannot be carried on the wagons, the troops help themselves by carrying along all the pieces of clothing that have been distributed to them. Naturally, a very systematic distribution of the clothing cannot be carried out.

USE OF ALCOHOL IN THE ARMY

In addition to pieces of clothing, the most various articles of equipment have been supplied to the soldiers for their physical comfort. Among these things, alcohol played a rôle for a certain time, although the use of alcohol in the army has been restricted to the minimum by orders of our military medical service. The autumn storms with their cold winds and frequent rainfall aroused the need for warming drinks among the soldiers; therefore alcoholics were furnished to the privates through the express wishes of some of the commanding generals. But immediately warning voices were raised, especially of physicians, who pointed out the objectionable character of the expense for alcohol. By this means a diminution of these presents has been secured. Also some of the leaders of the troops have pointed out in their published reports that the people might well send other articles or gifts rather than alcoholics. Of some aid in this matter is the fact that in the West the cold is very slight. A well-known clinician, who has been spending some time as a consulting internist in the army of the West, and has returned for a few days, has stated that at present there prevail in the West climatic conditions something like those of the Isle of Wight, so that the need for artificial heat, external or internal, is very slight. In the east, naturally, the condition is quite different.

HEALTH OF THE TROOPS

The mild weather has also had a favorable influence on the health of the troops. The number of diseases due to taking cold has been materially reduced in the West, and especially those affecting the intestinal canal. Frostbites are seldom observed. Even typhoid is restrained within moderate limits, and so far has reached only a fraction of the 75,000 cases which appeared in the war of 1870-1871 in a small force, compared with our present army of millions. Even among physicians, typhoid has already demanded some victims. Altogether in the regular lists of losses published, 350 physicians, that is, about 3 per cent., are included, among them, 112 with slight and 40 with serious wounds; 1 is sick, 65 are dead and 124 missing, of whom the majority are prisoners. The latter, it is to be hoped, will gradually return to their mother country in the way of exchange. A few days ago eight French army surgeons and 85 members of the sanitary corps were discharged from the German prison, and as many of the medical division of our army will return to us from France.

ABUNDANCE OF SUPPLIES AND MONEY

In spite of the enormous numbers, no difficulty has so far been experienced with reference to bandages and medical supplies for the treatment of the wounded. Both in the matter of food and also in that of medicine, our land produces more than it needs. To be sure, the export of a number of medicaments has been forbidden, including antifebrin, aspirin, cocain, formaldehyd, phenol (carbolic acid), morphin, opium, phenacetin, codein, pyramidon, antipyrin, salipyrin, mercury and mercuric salts, bacterial serums and the like.

HELP FOR LYING-IN WOMEN

The imperial fund affords an extraordinary contribution to lying-in women for the period after delivery, provided their husbands are serving in the army or medical corps or similar service not of a commercial nature during the present war, and that these men are insured against sickness. The assistance consists in all those services which the imperial insurance law designates as *Wochenhilfe*, and includes what the Krankenkassen are legally obliged to furnish and also in general what they are able to undertake as a voluntary contribution through their fees. These services include the help of a midwife or a physician not only during labor, but also for any complaints due to pregnancy, and further a stipend for the puerperium and for nursing. The puerperal stipend is paid at the rate of a mark (24 cents) a day for eight weeks. The nursing money is received at the rate of 50 pfennig (12 cents) per day by the mothers, as long as they themselves nurse their infants, for a period of twelve weeks after the delivery. The Krankenkassen furnish these services and receive compensation for them from the imperial treasury. For the treatment during labor, 25 marks are paid for each case, and an amount up to 10 marks for illness during pregnancy. The insurance societies may choose to furnish treatment by a physician or midwife directly instead of providing a cash payment. This is on condition that the insurance society has a contract for this purpose with its physician and could not, for this reason, as well as on account of the necessity of using the imperial assistance generally in an even manner, make general rules. It is important that the help in case of labor shall also be assured in cases in which the husband, by entering the army, has made no use of his right for voluntary additional insurance. Moreover, the Krankenkassen must supply the same assistance in case of labor for women who have insured themselves and in whose case there is no question of the husband taking part in the war.

THE UNEMPLOYED

As far as the assistance to the unemployed is concerned, it must be stated that the number of these persons has been continually decreasing for some weeks. The entire number of members liable to insurance of the twenty-eight local general sickness insurance societies of Berlin increased in one week by 2,000, or 0.5 per cent. The 210 trade Krankenkassen showed an increase of 0.9 per cent.. Among the free companies, the number of unemployed has fallen 6.5 per cent. in one week.

TREATMENT OF THE WOUNDED

The results of the treatment of the wounded are, as previously, particularly favorable. Only tetanus and the gas phlegmons have been observed among wound infections with an apparently greater frequency in this war. The percentage of these complications is in general, however, small. So far as can be judged at present, the number of those who have become fit for service again is considerable. According to a statement by Czerny of Heidelberg, 37.5 per cent. of the wounded in his experience are already cured, and only 6.5 per cent. have remained unfit for duty.

Seventieth Birthday of Professor Fritsch

Professor Fritsch, formerly for many years director of the Bonn University clinic for gynecology, celebrated his seventieth birthday, December 5. He was first assistant of Professor Olshausen, joined the faculty of Halle in 1874 as privat-docent, in 1882 became regular professor and the successor of Spiegelberg at Breslau, and in 1883 director of the gynecologic clinic of Bonn. In 1911, he retired from his position on account of ill health, and removed to Hamburg, principally in order to be treated by his son-in-law, Professor Brauer. Of his text-books, "Das Lehrbuch über Frauenkrankheiten," "Das Lehrbuch der Geburtshilfe," "Die gerichtsärztliche Geburtshilfe," and "Pathologie und Therapie des Wochenbetts" are noteworthy.

Marriages

Delivan Alexander MacGregor, M.D., Wheeling, W. Va., to Miss Ethel Marguerite Eastman of Iowa City, Ia., December 31.

Walter Wynn Barnett, M.D., Fort Wayne, Ind., to Miss Irma Bogash of Valparaiso, Ind., December 23.

John Walter Morris, M.D., to Miss Frances J. Moorman, both of Somerville, Tenn., December 29.

Henry Shillingford Miles, M.D., to Miss Edith Alicia Zink, both of Bridgeport, Conn., January 2.

John Luther Spangler, M.D., York, Pa., to Miss Mary E. Fink of Manchester Borough, Pa., December 25.

Philip Mills Jones, M.D., to Miss Helen Louise Spalding, both of San Francisco, December 13.

Charles Shivers Heritage, M.D., to Miss Annie Whitney Knock, both of Glassboro, N. J., November 11.

Deaths

Dudley Peter Allen, M.D. Harvard Medical School, 1880; a Fellow of the American Medical Association and formerly president of the Ohio State Medical Association; president of the American Surgical Association in 1906-1907; professor of principles of surgery in the Medical Department of Medical Reserve University, Cleveland, for many years, and later emeritus professor of surgery; visiting surgeon to the Lakeside Hospital and consulting surgeon to the Charity and City hospitals, Cleveland; a director of the First National Bank and Trust Company, Cleveland, and a trustee of Oberlin College which conferred on him the honorary degrees of M.A. in 1883 and of LL.D. in 1908; died in a hotel in New York City, January 6, from pneumonia, aged 62.

Waldemar Edward Fischer, M.D. Marion-Sims College of Medicine, St. Louis, 1888; a Fellow of the American Medical Association; formerly assistant to the eye clinic in his Alma Mater; oculist to the Missouri Baptist Sanitarium, St. Louis; First Lieutenant Medical Reserve Corps, U. S. Army; a well-known ophthalmologist of St. Louis; died in that city, December 9, it is believed by his own hand, while mentally irresponsible.

David J. Loring, M.D. Rush Medical College, 1878; a Fellow of the American Medical Association; and secretary to the Porter County (Ind.) Medical Society; surgeon to the Loring Private Hospital, Valparaiso; local surgeon of the Pennsylvania, Grand Trunk and Nickel Plate systems; formerly surgeon in chief to St. Margaret's Hospital, Hammond; died at his home in Valparaiso, Ind., December 29, from ptomain poisoning, aged 66.

Henry B. A. Kugeler, M.D. University of California, San Francisco, 1890; a Fellow of the American Medical Association; instructor in operative surgery and chief of the surgical dispensary clinic in his Alma Mater; visiting surgeon to St. Joseph's Hospital, San Francisco; a well-known and highly respected surgeon of San Francisco; long a sufferer from kidney disease; died December 27, from carcinoma of the prostate gland, aged 44.

James B. Cox, M.D. College of Physicians and Surgeons, Keokuk, 1865; a pioneer practitioner of Benton County, Ia., and for nearly half a century a practitioner of Belle Plaine; and for thirty years local surgeon to the Northwestern System; died suddenly at his home in Belle Plaine, December 20, aged 72.

Zachariah Ford Lillard, M.D. Missouri Medical College, St. Louis, 1891; a member of the State Medical Association of Texas; local surgeon at Houston for the Southern Pacific System; and a member of the Houston Board of Health; died in the John Sealy Hospital, Galveston, Tex., December 27, aged 54.

Alton H. Garratt, M.D. Trinity Medical College, Toronto, 1888; demonstrator of clinical gynecology in the University of Toronto; one of the founders of the Toronto General and St. Michael's hospitals, Toronto; died at his home in that city, December 21, from heart disease, aged 49.

Elijah B. Bush, M.D. Atlanta (Ga.) Medical College, 1850; formerly a member of the general assembly and senate of

Georgia, and for several years physician in chief to the state penitentiary; died at his home in Colquitt, Ga., December 22, from nephritis, aged 54.

Charles L. Grube, M.D. Saginaw Valley Medical College, Saginaw, Mich., 1900; a physician and druggist of Saginaw, Mich.; once coroner of Saginaw County and for two terms city physician of Saginaw; died in the Pontiac State Hospital, December 21, aged 40.

John Harry Swaving, M.D. University of Pennsylvania, Philadelphia, 1889; formerly a Fellow of the American Medical Association; surgeon to the State Sanatorium, Hamburg; died at his home in Pottsville, Pa., December 30, from cerebral hemorrhage, aged 47.

Eber Leslie Washburn, M.D. University of Vermont, Burlington, 1896; a Fellow of the American Medical Association and a specialist on diseases of the eye, ear, nose and throat of East Berkshire, Vt.; was found dead in his barn, December 14, aged 50.

John H. Dupin (license, Kentucky, forty years practice, 1893) a veteran of the Mexican War and for many years a practitioner and dentist of Uniontown, Ky.; died at the home of his daughter in St. Louis, in September, from senile debility, aged 87.

Calvin Brewer Anderson, M.D. Dartmouth Medical School, Hanover, N. H., 1878; a veteran of the Civil War and for many years a practitioner of Vermont; died at the home of his daughter in San Antonio, Tex., August 30, from kidney disease, aged 78.

Robert C. Grigg, M.D. Rush Medical College, 1871; a veteran of the Civil War; for thirty-two years a practitioner of Murray, Ia., and later a resident of Des Moines and Sioux City; died at his home in the latter city, December 12, aged 76.

William Marcellus Eddy, M.D. Cleveland University of Medicine and Surgery, 1865; later instructor in anatomy in his Alma Mater; a pioneer practitioner of Marengo, Ia.; died at his home in that place, December 27, aged 76.

Henry Dusenbury, M.D. College of Physicians and Surgeons in the City of New York, 1866; for nearly half a century a practitioner of Williamsburg, Brooklyn; died at his home, December 30, from senile debility, aged 80.

John T. Johnson, M.D. University of Pennsylvania, Philadelphia, 1861; a Confederate veteran and for nearly half a century a practitioner of Hickory, N. C.; died at his home in that place, December 24, from pneumonia, aged 78.

James Vercoe, M.D. Michigan College of Medicine, Detroit, 1881; for thirty years a physician and druggist of Skagit County, Wash.; died on his ranch on the Olympia Marsh, near Maiben Station, Wash., December 19.

George Loring Pierce, M.D. Medical School of Maine, Brunswick, 1861; Jefferson Medical College, 1879; for many years a practitioner of New York City; died at his old home in Kittery Depot, Me., December 22, aged 77.

Junius Terry, M.D. Missouri Medical College, St. Louis, 1861; for thirty years a resident of Chicago; died at his home in that city, December 28, aged 73.

John Edgar Tamlyn, M.D. University of Toronto, Ont., 1864; for forty-eight years a practitioner of Wingham, Ont.; died at his home December 18, aged 81.

Thomas J. Rude (license, Kansas, 1903), formerly principal of the Burton (Kan.) schools; died at his home in Cambridge, Kan., December 13, aged 58.

Sherwood E. Seeley (license, Illinois, years of practice, 1877), for half a century a resident of Fulton, Ill.; died at his home, December 18, aged 82.

George Nichols, M.D. Hahnemann Medical College, Philadelphia, 1861; died at his home in Brooklyn, December 10, from heart disease, aged 85.

Robert C. Carroll, M.D. Western University, London, Ont., 1909; of Calgary, Alta.; died at North Dunwich, Ont., about November 23, aged 31.

Walter W. Atkins, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1887; died at his home in Milton, Ia., December 14, aged 61.

Morton Grant Sturdevant, M.D. University of Louisville, Ky., 1896; died recently at his home in Salem, Ind., aged 43.

Frank A. Barber, M.D. Bennett Medical College, Chicago, 1878; died at his home in Chicago, December 27, aged 60.

Julius L. Friedler, M.D. Bellevue Hospital Medical College, 1890; died at his home in New York City, December 13, aged 59.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

ABOLISHING SECRECY AND MYSTERY IN PATENT MEDICINES

New York City Makes a Move to Protect the Public Against the Nostrum Evil

[For some time past, Dr. S. S. Goldwater, Health Commissioner of New York City, has been making an effort to protect the public against the dangers and frauds in "patent medicines." Dr. Goldwater's work was finally crystalized into a revision of the sanitary code that was adopted by the New York Board of Health at its regular meeting Dec. 31, 1914. That part of the revised code regulating the sale of proprietary medicines requires that all "patent medicines" shall bear on the labels the names of their ingredients or, as an alternative, the names of such ingredients shall be registered with the Department of Health. This regulation is not to go into effect before Dec. 31, 1915, thus allowing druggists a year to dispose of stock already on hand. Needless to say, the "patent medicine" interests are up in arms against this attempt to destroy their most valuable assets—secrecy and mystery.

The New York *Tribune* is printing a series of articles on advertising, written from the standpoint of the public rather than the advertiser. The series is written by Samuel Hopkins Adams, whose name is a sufficient guarantee that the subject is being dealt with, not only from the view of the best interests of the public, but also in a way that admits of no equivocation. The first article of the series appeared in the *Tribune* of January 4. In the *Tribune* January 8, Mr. Adams describes the protest made at the public hearing held in the City Hall on January 7 by the "patent medicine" interests against the Board of Health's new labeling regulation. We give below in full Mr. Adams' article. Our readers will recognize some familiar names in those who appeared before the Board of Health in behalf of "patent medicines." The name of Dr. William C. Anderson will call to the memory of our readers The Journal's exposés of the "American Druggists Syndicate," an organization that brazenly announced that it had appropriated physicians' prescriptions and was dispensing them in ready-made packages. Dr. Anderson was chairman of the syndicate's "formula committee" which was alleged to pass on the value of "thousands of prescriptions written by the most successful physicians in every state in the Union" and to "select the premium prescription and offer it to the public in a ready-made package."

Henry R. Strong, who went from St. Louis to New York to join in the protests is the publisher of the *Medical Brief* and the *National Druggist*. The *Medical Brief* is, as most physicians know, a nostrum-exploiting sheet, whose continued existence is due to the easy tolerance of the medical profession. The *National Druggist* has for years apparently acted as the mouthpiece for the "patent medicine" interests. Letters and pamphlets have been circulated broadcast, blackguarding the medical profession in general and the American Medical Association in particular. "The Menace of the Dispensing Doctor," "A Conspiracy to Establish a Physicians' Trust," "The Machinations of the American Medical Association" and "Confiscatory Legislation"—these are but a few of the tirades from the *National Druggist* against the medical profession. It was the *National Drug-*

gist also that protested against any amendment to the Food and Drugs Act, that would prohibit false and fraudulent claims for curative effects of "patent medicines." Broadly, it may be said that the *Medical Brief* and the *National Druggist* stand for everything that reputable physicians oppose. It is not surprising, therefore, that Mr. Strong was on hand to champion the interests of his clientele at the public hearing for the New York Board of Health.

It was, of course, entirely fitting that A. V. Payne, exploiter of as cruel a fraud as there is on the market—Pulmonol, an alleged "consumption cure"—should join hands with Mr. Strong, Dr. Anderson, Mr. Thompson, the general counsel for the "patent medicine" combine, and Albert Plaut, president of Lehn and Fink. But we will give Mr. Adams' report in full, as it appeared in the *Tribune*, and our readers can draw their own conclusions:]

CONSPIRACY, BOGIE CRY OF MEDICINE MEN

INTERESTS BACK OF TRAFFIC IN PATENT "CURES" PROTEST AT CITY HALL

By Samuel Hopkins Adams

All the familiar patent medicine bogies were trotted out into the light of day at the Board of Health hearing held in the City Hall yesterday afternoon and made to rattle their poor, ricketty bones in protest against the board's honest labelling regulation. This order requires that the ingredients of every patent medicine sold in this city shall either be stated on the label or filed with the board. Secrecy being the life of trade with the nostrums, the representatives of various allied industries, retail and wholesale druggists, patent medicine manufacturers, handlers of crooked advertising, proprietors of not-too-particular journals, lawyers and quacks flocked to the place in such numbers that the big room couldn't hold all of them.

They shouted approval when their spokesman denounced the wicked "medical trust" which is trying to keep the beneficent dopes and booze medicines from doing so much good in secret; they wildly cheered the quack doctor who seized the occasion to give a little advertising to his own fake consumption cure; and they hissed, booed and hooted the presiding officer, Dr. Goldwater, when he attempted to stem the tide of general denunciation and get down to specific data.

QUACKS HAVE A DAY

It was distinctly and exclusively their day. Only opposition to the measure was in order, the only restriction being that legal points were not permitted. The forces of secrecy in medicine were marshalled by Dr. William C. Anderson, who, to do him justice, did his best against heavy odds to keep his unruly followers in order. He opened the meeting for the opponents of the bill by stating his imperishable conviction that there were already all the patent medicine laws on the books that the public could stand, to which sentiment the embattled druggists on the benches responded with howls of approbation. He then introduced Albert Plaut, of Lehn & Fink, a wholesale drug firm.

Mr. Plaut was a perfect Cassandra of calamity. If the Board of Health regulation was enforced, he declared, eight out of the twelve great drug houses in the city would have to move to Jersey or elsewhere. Dr. Goldwater, whose disposition to get at the bottom of matters proved embarassing if not actually painful to various of the speakers in the course of the proceedings, asked why the other four should stay. After some hesitancy Mr. Plaut decided that it would be because their trade was largely local. There was no other form of business, he declared, more open and above-board than the business of selling drugs.

"If that is the case," queried the commissioner, "why do you insist on secrecy?"

To which the speaker hadn't found a reply at time of going to press.

HOOT AT GOLDWATER

Dr. J. H. Rehfuss, of the New York Pharmaceutical Association, roused the interest of the board to such an extent that they asked him several questions pertinent to the line of his remarks. This was hotly resented by the embattled druggists, who yelled, hooted, hissed and warned Dr. Goldwater that he was in the United States, where he "couldn't put any Russian business over."

When the disorder was quieted, Mr. Henry R. Strong, representing the pharmaceutical press, took the floor to enunciate the noble principle, with much gesticulatory emphasis, that he was of Anglo-Saxon blood and nobody could take away from him the right to drink what he wished. Nobody being found who wanted to, he made a somewhat mixed impression upon his hearers by telling them that he knew the drug trade well, and that he didn't doubt but what a large proportion of those present were unprincipled. To conclude, he produced the old bogie of "medical trust conspiracy." One interesting point which he neglected to mention was that that portion of the pharmaceutical press which he represents lives largely on fraudulent medical advertisements which a high class drug medium, like the Druggists' Circular, for example, would not permit in its columns.

The singular spectacle of an official intrusted with the safeguarding of the public health acting directly against the interests of the public health was presented when Alderman Jacob Weil took the floor to oppose the bill. In private life Mr. Weil is a jobber in the drug trade. In public life he is chairman of the health committee of the Board of Aldermen. His proposition, which had at least the virtue of ingenuousness, was that the whole matter be referred to his committee. Presumably on the ground that he wasn't sure whether Mr. Weil would act upon it as an alderman or as a secrecy-defending druggist, Dr. Goldwater failed to seize this opportunity of ending the trouble. Unfortunately the aldermanic advocate fell into a snare when he declared that all good and high-minded druggists, the kind whom he saw before him in such impressive numbers, were against the evil patent medicines and would support an ordinance, for example, forbidding the sale of consumption cures.

"MEDICAL TRUST" NEW BOGIE

Straightway up jumped Dr. A. V. Payne, of Pulmonol ill-fame. He sailed into the "medical trust"; he denounced the American Medical Association; he fulminated against conspiracy, and he was fairly launched upon a glowing testimonial to his own fake consumption cure when the chair called him to order. And that great crowd of good and high minded druggists (Alderman Weil's guarantee), strong against the evil patent medicines, cheered the exponent of the wickedest and meanest of all forms of charlatanry to the echo. Mr. Weil was not called in rebuttal. After Samuel C. Henry had spoken for the out-of-town drug trade a gentleman named Weinert appeared as representing the poor. The bill, he said, would be very bad for the poor. If secrecy were abolished on the patent medicine bottle the submerged tenth of our populace, if Mr. Weinert is to be believed, would wither away and perish, presumably of chagrin at finding out what sort of trash they had been paying good money for all these years—though the speaker didn't say so. Mild but insistent questioning by Dr. Goldwater elicited the fact from the reluctant lips of Weinert that he was an advertising solicitor for two East Side papers which subsist largely on patent medicine advertising. After this Mr. Weinert seemed to lose interest in himself.

Another coy speaker was Henry B. Thompson. Bland and oratorical is Mr. Thompson, as befits the general counsel for the Proprietary Association of America, better known as the patent medicine combination; and quite outspoken to the extent of explaining his official status. The coyness developed when he was asked for details.

"What is the Proprietary Association?" asked Dr. Goldwater.

"An organization of manufacturers of proprietary remedies," was the reply.

"Will you give a list of membership?"

"I will not," said Mr. Thompson shrinkingly, but with determination.

"Just one or two?" persuaded the commissioner.

Mr. Thompson, after a struggle with his natural reticence, managed to emit the style and title of a comparatively innocent liver pill.

"Another?" suggested the presiding official.

Further painful effort produced the name of a laxative syrup.

"More?" encouraged Dr. Goldwater.

At this point aphasia supervened. In vain did Mr. Thompson call upon his memory. All the great, blatant quackeries which club together to employ him had slipped from his mind, though their advertisements afflict the eye daily from coast to coast. He shyly murmured something about "a good many others," and launched into forensic oratory to prove that the board had no power to limit personal liberty, confiscate property rights, interfere with business, and so on.

Then Peter Diamond, a type of the oldtime high-class prescription druggist, made a temperate speech, objecting to the regulation as infringing upon the practice of pharmacy. Professor Raubenheimer dipped into patent medicine history, and the hearing closed.

BELL-ANS (PA-PAY-ANS, BELL)

Another "Patent Medicine" Foisted on the Public Through the Medical Profession

With such nostrums as Antikamnia and Resinol fresh in mind as flagrant examples of "patent medicines" introduced to the public through the medical profession, what follows regarding Bell-ans, or, as it is better remembered by physicians, Pa-pay-ans (Bell), will take on an added interest. Briefly, Bell-ans is the new name of a tablet that, according to chemists' reports, is essentially charcoal, baking soda and ginger, flavored with oil of wintergreen. Its selling point, in the past at least, has been the alleged presence of papain. This drug, Bell & Co. allege, is present in their tablets and they claim is "the digestive principle obtained by our own exclusive process from the fruit of *Carica papaya.*" As long ago as 1909, the Council on Pharmacy and Chemistry attempted to find papain present in what was then called Pap-pay-ans (Bell) and to determine the digestive power of the tablets but with negative results. The efforts of other chemists were equally unavailing.

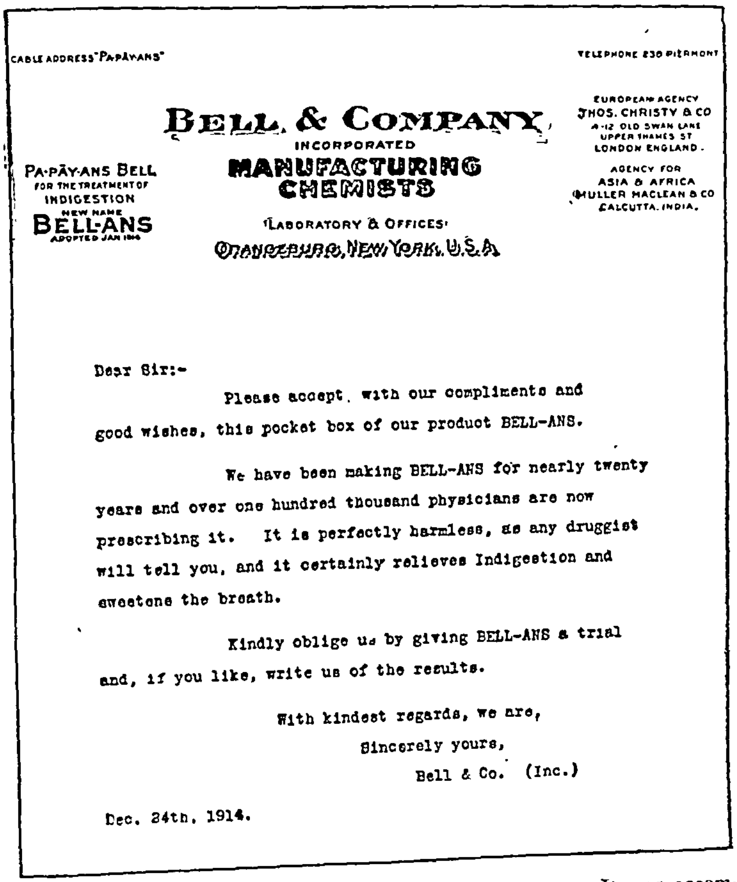
In January, 1914, Bell and Company changed the name of the product "Pa-pay-ans (Bell)" to "Bell-ans." As The Journal remarked soon after, it seemed probable that, as the name of a nostrum of this kind is the manufacturer's most valuable asset, the name was hardly changed, as was alleged, for purely euphonious reasons. It seemed more likely that as analyses had indicated there was not, and probably never had been, any appreciable amount of papain in the product, the change of name might be due to the fear that some day the misleading name might bring the preparation in conflict with the federal Food and Drugs Act.

For years physicians have realized that the methods of exploitation of Pa-pay-ans (Bell) have been such as to make the medical profession a vast free advertising agency for the nostrum. So far as we know Pa-pay-ans (Bell) has never been advertised in lay journals—newspapers, etc. Certain medical journals, however, have, for a long time, carried the advertisements of Pa-pay-ans (Bell)—and later of Bell-ans—while Bell & Co. has been lavish in its distribution of free samples, blotters and other advertising paraphernalia direct to the medical profession.

Now it seems, Bell and Company are going direct to the public by means of vest-pocket samples and letters. The letter, a miniature facsimile of which we reproduce, is one addressed to laymen and accompanies a vest-pocket box of the nostrum.

Here are some of the things that Bell and Company claim Bell-ans will do:

> "It removes flatulence, vertigo, weakness and other symptoms of indigestion quickly and pleasantly."
>
> "It relieves vomiting in pregnancy, alcoholism, seasickness and cholera morbus. . . ."
>
> "To promote appetite, digestion, and the elimination of toxic and waste material, prescribe two Bell-ans. . . ."
>
> ". . . prevent eruptions, nausea, vertigo, pain, etc. . . ."
>
> ". . . remove distension, pain, weakness, depression, etc. . . ."
>
> "There is no derangement of the digestive organs upon which the proper dose of Bell-ans (Pa-pay-ans, Bell) will not act quickly, pleasantly and favorably . . ."



CABLE ADDRESS "PA-PAY-ANS"

TELEPHONE 230 PIERMONT

BELL & COMPANY

INCORPORATED

MANUFACTURING CHEMISTS

LABORATORY & OFFICES

ORANGEBURG, NEW YORK, U.S.A.

PA-PAY-ANS BELL
FOR THE TREATMENT OF
INDIGESTION
NEW NAME
BELL-ANS
ADOPTED JAN 1914

EUROPEAN AGENCY
THOS. CHRISTY & CO
4-12 OLD SWAN LANE
UPPER THAMES ST
LONDON ENGLAND.

AGENCY FOR
ASIA & AFRICA
MULLER MACLEAN & CO
CALCUTTA, INDIA.

Dear Sir:-

Please accept, with our compliments and good wishes, this pocket box of our product BELL-ANS.

We have been making BELL-ANS for nearly twenty years and over one hundred thousand physicians are now prescribing it. It is perfectly harmless, as any druggist will tell you, and it certainly relieves Indigestion and sweetens the breath.

Kindly oblige us by giving BELL-ANS a trial and, if you like, write us of the results.

With kindest regards, we are,
Sincerely yours,
Bell & Co. (Inc.)

Dec. 24th, 1914.

Miniature facsimile of a letter received by a layman. It was accompanied by a small box of Bell-ans. Two points are worth noting: ". . . one hundred thousand physicians are now prescribing it"; "any druggist will tell you" that it is perfectly harmless!

There is no physician living who really believes such claims as these! Yet on the medical profession rests the responsibility for the exploitation of this nostrum. Those medical journals which accept advertisements for things of this kind are not so much to blame as those physicians who unprotestingly tolerate the journals that do so. Privately owned medical journals are published, usually, as a commercial proposition; they reflect, to a greater or lesser extent, the attitude of their readers, subscribers and contributors. There are at least three medical journals which carry the advertisements of Bell-ans. They are the *New York Medical Journal*, the *International Journal of Surgery* and the *Massachusetts Medical Journal.*

Bell-ans (Pa-pay-ans, Bell) possesses the virtues—and they are few—and the limitations—and these are many—inherent to a mixture of bicarbonate of soda, ginger and charcoal. Any druggist could put up just as good a remedy, and any physician could write a prescription for a better one in those cases in which he might think it indicated. The whole secret of the commercial success of Bell-ans lies in the mystery of its composition and the fraudulence of the claims that have been made for it. The same tablets put out under a non-proprietary name, as an open formula and with claims that were reasonable and true, would have had practically no sale. The commercial success of Bell-ans is a monument whose foundation rests equally on the unscrupulousness of the manufacturer and on the gullibility of a learned profession.

Correspondence

"Hospitalism" and Infant Hospitals

To the Editor:—I regret very deeply that Dr. Henry Dwight Chapin did not make two articles out of the one entitled, "Are Institutions for Infants Necessary?" which appeared in The Journal of January 2. One article might then have been entitled, "Are Infant Asylums Necessary?" and his conclusion would have been "No," in agreement with practically all thought on this line of social work.

His second article might have had the title, "How Can Mortality in Infant Hospitals be Reduced?" or "Successful Methods Used in a Certain Infant Hospital, as Shown by Its Low Mortality Record." An abstract of the second article might then have read as follows: "Hospital marasmus the result of bad hygiene and ward infections. Such infections recall mortality of old time maternity hospitals. No excuse for either in this century. Methods which allow such infections have survived from 200 years ago. Modern methods in hygiene, individualization, and aseptic nursing prevent high mortality. Skilled care by trained hospital attendants desirable. Infant hospitals necessary to save infant life, both in acute and chronic ailments. Long residence will not expose infants to cross infection and bad hygiene, if short residence does not. Modern methods in a certain infant hospital are based on principle that infections are carried, not air-borne. Hygienic methods adequate to baby life worked out in detail. Personality and individuality of babies respected, studied and acted on. Result is that mortality is less than that of community in which hospital is located in spite of fact that only sick babies are admitted. Hospitalism not allowed to develop."

Naturally I cannot expect successfully to force my thoughts on another, but am only imagining what Dr. Chapin might have written to please me. Without hint of personal criticism I may be allowed to regret that he has so unfortunately confused the work of infant hospitals and asylums, and has seemed to pass up the problems of infant hospitals as hopeless. To turn all chronic cases of infant sickness over to the substandard care of foster mothers would be to do away with invaluable and efficient hospital methods. We have the knowledge and ability to prevent "hospitalism" in infant hospitals. This knowledge should be applied, as I know from personal experience that it can be.

A. W. Gray, M.D., Milwaukee.

[The above letter was referred to Dr. Henry D. Chapin who replied:]

To the Editor:—I regret that my recent article "Are Institutions for Infants Necessary?" does not seem wholly to have pleased your correspondent. However, I think he has failed to grasp the meaning of my suggestions. I do not believe we differ very much. My contention is that many sick infants may be successfully treated at home if efficient nursing can be obtained. The statistics I produced from the Henry Street Settlement, New York, prove this point, although the work was carried out in the most densely populated tenement house district in the world. I do not propose to hand over sick infants to foster mothers as the doctor seems to imagine, and I tried to make very clear the dstinction between infant asylums and hospitals. The systematized and regulated "boarding out" I advise only as a substitute for the asylums which should all be abolished.

I tried to emphasize the fact that strict aseptic nursing and small units are essential to success. These I have employed, but a very large experience in this work, under favorable conditions, has convinced me that a short stay in the hospital is best for the infant, who should be discharged as soon as the acute symptoms have subsided. The infant seems to lose immunity and resistance after too long a stay in a hospital, even with good nursing and care. As an example, unless all visitors are absolutely barred, influenza and other infections are exceedingly difficult to constantly keep out. The nurses and attendants themselves may at times be the carriers of these infections. My critic seems to have been fortunate in always securing the perfection of nursing so necessary for infants—but, even with this, the baby is usually better at home during the convalescent stage. "The personality and individuality of babies" can here be best conserved. Some infants' hospitals depend largely for their nursing upon women who are under short training to act as nursery maids.

I am familiar with many of the infants' hospitals of the world and willingly concede that under the conditions mentioned in my article they can do good work, but there is no great need for their multiplication. Some of the work that devolves upon them can, with a little extra care, be accomplished as well at home and often under safer and more normal conditions for the infant. The personality of the baby calls for individual and loving care if the best results are to be obtained.

Henry Dwight Chapin, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OLIVE AND COTTONSEED OILS

To the Editor:—1. What is the comparative value of olive and cottonseed oils?

2. Are our olive oils, produced here or imported, adulterated with cottonseed *oil?* M. R. Morden, M.D., Adrian, Mich.

Answer.—1. For ordinary pharmaceutical uses, there seems to be no reason why one cannot be substituted for the other. Their dietetic value is also essentially the same.

2. While the exportation of cottonseed oil for the purpose of reimporting it as olive oil or using it to adulterate that oil was formerly quite prevalent, the practice, we understand, has practically ceased.

REQUEST FOR TITLES OF ORIGINAL CONTRIBUTIONS TO THE MEDICAL SCIENCES

To the Editor:—I am writing a paper on the *original* contributions of America to medical sciences.

By *original* contribution is meant something new that has not been done before by somebody else.

I respectfully solicit the members of the profession to send me the titles of their original contributions, and also the titles of the original contributions of other members of the profession, past or present.

Edmond Souchon, 2403 St. Charles Avenue, New Orleans.
Jan. 7, 1915.

REMOVAL OF RUST FROM INSTRUMENTS

To the Editor:—Your correspondent (The Journal, Jan. 2, 1915, p. 72) should try a solution of tin chlorid, preferably hot, into which the rusted instruments are to be laid and afterward *rinsed in* clear water. The abrasives remove the polish.

Edmund D. Spears, M.D., Boston.

Armies of Slaughter and the Army of Prevention.—We shudder at the needless slaughter of the brave young fellows —allies and foes alike—but think of the slaughter which goes on in our homes, just as cruel as, often more cruel than, that of the battle-field! Tuberculosis alone will kill ten times as many this year in Great Britain as will die abroad for their country. Comparing the death-rate in England to-day with that of fifty years ago we may say that, as a result of the work of the other army, more will be saved from death by enteric fever in 1914 than will be killed this year in the war. Eberth's *Bacillus typhosus* will kill in 1914 in the United States more than will German shrapnel and bullets in France and Russia. Moving in silence, the great army of sanitation, with a general staff and leaders of all lands and languages, claims allegiance only to Humanity. In war it has not often fought winning campaigns, but the new knowledge is full of such promise that even the vanquished may be victors.—Sir W. Osler in *British Medical Journal.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Iowa: Des Moines, Jan. 19-21, 1915. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

Kansas: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lebanon.

New York: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

Massachusetts September Report

Dr. Walter P. Bowers, secretary of the Massachusetts State Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, Sept. 8-10, 1914. The total number of subjects examined in was 13; total number of questions asked, 74; percentage required to pass, 75. The total number of candidates examined was 51, of whom 20 passed, including one osteopath, and 31 failed, including 7 osteopaths and 12 non-graduates. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Yale Medical School	(1905)	81.4
Indiana College of Medicine and Midwifery	(1888)	77.7*
Medical School of Maine (1913) 75.7, 80.6;	(1914)	75.6
Coll. of Phys. and Surgs., Baltimore (1911) 75; (1913) 75.2;	(1914)	75.4.
Johns Hopkins University	(1911)	82.5
Boston University	(1914)	80.7
Harvard University	(1914)	77.2
Tufts College Medical School (1905) 77; (1913) 80.6;	(1914)	75, 75.2
Dartmouth Medical School	(1914)	79.5
University and Bellevue Hospital Medical College	(1913)	75
Medico-Chirurgical College of Philadelphia	(1914)	75
University of Vermont	(1914)	77.5

* Graduation not verified.

FAILED

College	Year Grad.	Per Cent.
Bennett Medical College	(1912)	64.2
University of Louisville	(1912)	65.7, 71.3
College of Physicians and Surgeons, Boston (1907) 58.1; (1908) 65.7; (1913) 67.7, 71;	(1914)	69.6.
Tufts College Medical College	(1913)	73.7
Bellevue Hospital Medical College	(1887)	32.2
University of West Tennessee	(1913)	68.8
Syrian Protestant College	(1890)	43.6
Non-graduates, 25.6, 48.1, 60.5, 61.2, 61.7, 67, 70.1, 70.6, 71.2, 71.5, 71.8, 72.1.		

The following questions were asked:

DIAGNOSIS AND THERAPEUTICS

1. Mention three of the most frequent complications which may arise during an attack of lobar pneumonia. Give treatment for one of them. 2. What complications may arise in whooping-cough? What means should be adopted in the treatment of the disease to prevent them? 3. Define and give etiology of Ludwig's angina (cellulitis of the neck). 4. Give the pathognomonic symptom or symptoms, if such there be, of malaria. Also your treatment for that disease. 5. Write a page on the causes, symptoms and treatment of exophthalmic goiter. 6. Give description, causes and treatment of a case of urticaria. 7. Patient, a man 44 years of age, began a year ago with frequent attacks of vertigo, persistent and increasing headache, difficulty of vision and speech, convulsions without loss of consciousness, and at times nausea and vomiting. What is your diagnosis? 8. Outline a course of treatment for a case of gout. 9. Give causes, symptoms and treatment of herpes zoster. 10. What indications or symptoms would call for the administration of ergot? If your practice does not include the use of drugs, what methods would you employ in place of the drug?

ANATOMY AND HISTOLOGY

1. What anatomic structures are involved in the problem of fallen arches? 2. Describe the semicircular canals. 3. Give an outline of the regional anatomy of the neck. 4. Give a description of heart muscle. 5. Describe the hip joint. 6. What bones are involved in so-called Colles' fracture? 7. Describe the pancreas. 8. Give the distribution and arrangement of the blood-vessels of the kidney. 9. Describe the patella, giving its relations and attachments. 10. What are sesamoid bones and where found?

PEDIATRICS AND TOXICOLOGY

1. What standards should be required of milk producers? 2. Give etiology and treatment of cholera infantum. 3. What would indicate a pyloric stenosis in early life? 4. Give your treatment for chorea. 5. What are the dangers incident to removal of tonsils and adenoids? 6. What are the different forms of congenital herniae; what should be done in each case? 7. What is the cause of hydrocephalus? What treatment would you recommend? 8. Describe a case of toadstool poisoning and give treatment. 9. Differentiate strychnia and belladonna poisoning. 10. Describe clinically and pathologically chronic lead poisoning.

OBSTETRICS AND GYNECOLOGY

1. Why should the blood-pressure be taken during pregnancy? 2. How should a pregnant woman be advised concerning the care of her digestive organs during pregnancy? 3. How would you diagnose a twin pregnancy at the eighth month? 4. Can you always make a differential diagnosis between uterine fibroma and pregnancy? If so, how? 5. If a hand is found presenting during labor, what should be done? 6. What would lead you to suspect a dead fetus in utero at the eighth month? What questions would you ask the parents, and what advice would you give? 7. What is the explanation of pus tubes? Assuming that the patient may not be operated on, what will probably be the future history of such a case? 8. What is the law relating to the care of the eye of a new-born child? 9. Give the etiology and treatment of icterus neonatorum. 10. How do you treat caput succedaneum?

SURGERY

1. A woman 60 years of age, on rising in the morning, finds that her urine is distinctly bloody. She has no pain. What investigations should be made? 2. A patient has a continued fever lasting two weeks, ranging from 99 in the morning to 101.5 at night. She has two to four loose stools daily. The tongue is coated. Her abdomen is slightly tender to pressure to the left of the bladder region, and below the margin of the ribs 1 inch to the right of the right mammary line there is another tender area with slight resistance. Two years ago she had her breast removed for a so-called fibroid tumor. She has a negative Widal. She has a white count of 15,000. What would you do? 3. What are the indications for splenectomy? 4. What would you do for osteomyelitis of the tibia? 5. What is meant by artificial pneumothorax? 6. Discuss the surgical problem of abscess of the lung. 7. Describe briefly a case of abdominal fat necrosis, and state how it should be treated. 8. Give the etiology of cholelithiasis. 9. Under what circumstances may anastomosis of blood-vessels be employed? 10. A patient has round cell sarcoma of the glands of the neck. What may be done, and what is the probable history following treatment?

PATHOLOGY AND BACTERIOLOGY

1. Explain the phenomena of active and passive hyperemia. 2. A patient has an acute septicemia. What changes would be found in parenchymatous organs? 3. A patient dies of pyemia. Describe the kidney in such a case. 4. A person dies of abscess of the liver. Explain what may have caused this condition. 5. What would cause thrombosis of the mesenteric vessels? 6. Give the pathology of the different common forms of cystitis. 7. Give the pathology of elephantiasis. 8. Describe the blood in a case of myelogenous leukemia. 9. Give the pathology of malaria. 10. Describe the hookworm.

PHYSIOLOGY AND HYGIENE

1. What is the function and appearance of lymph? 2. What dietary conditions influence favorably or unfavorably the development of the teeth? 3. Describe and give the functions of the cellular elements of the blood, excepting the red blood-cells. 4. How and why do changes of temperature influence the functions of the kidneys? 5. What insects are dangerous to health? How should they be dealt with? 6. What changes result in muscle tissue following a diminished blood-supply? 7. What happens if the thyroid gland is removed? 8. What part of the brain is affected when a patient has aphasia? 9. How is acidity of the stomach maintained? 10. Describe the method of counting blood-cells.

Colorado October Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the oral and written examination held at Denver, Oct. 6, 1914. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 4, including 1 osteopath, all of whom passed. Sixteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Colorado	(1914)	88.6
George Washington University	(1905)	80.6
Bennett Medical College	(1913)	75.6

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Hahnemann Med. Coll. and Hosp., Chicago	(1902)	Iowa
Northwestern University	(1913)	Illinois
Rush Medical College	(1886)	Iowa
Baltimore Medical College	(1902)	Maryland
College of Physicians and Surgeons, Baltimore	(1882)	Mississippi
Central Med. Coll. of St. Joseph	(1905)	Missouri
Homeopathic Med. Coll. of Missouri	(1899)	Missouri
Kansas City Medical College	(1904)	Kansas
Medical-Chirurgical College of Philadelphia	(1904)	Penna.
Missouri Medical College	(1898)	Missouri
St. Louis College of Phys. and Surgs.	(1906)	Illinois
Univ. Med. College, Kansas City..(1901) Missouri;	(1905)	Kansas
Woman's Med. College of the N. Y. Infirmary for Women and Children	(1871)	New York
Vanderbilt University	(1900)	Tennessee
University of Texas	(1898)	Texas

Miscellany

The Rural School and Hookworm Disease

The connection between the rural school and hookworm disease is a close one. Dr. John A. Ferrell, assistant director of the International Health Commission, Washington, in a recent bulletin of the United States Bureau of Education (1914, No. 20) remarks that it has been found that the rural schools are the greatest mediums for the spread of the infection and the most important protective agencies against it. Records show an average infection among rural children of school age running as high as from 70 to 90 per cent. in whole counties, the schools being apparently the distributing centers for the disease. In a number of states, the state departments of health and education have cooperated to fight the disease. For the schools of Virginia a "health catechism" has been prepared in which the germ theory of disease, general sanitation, hookworm, tuberculosis and typhoid are taken up. The North Carolina State Department of Education has published a number of bulletins on health for the use of schools including one on "Ground-Itch or Hookworm Disease and Soil Pollution." Alabama and Kentucky have issued special bulletins on health subjects, including hookworm, for school use. In 1910-1911 all county teachers' institutes in Kentucky had lectures by health officers, and in 1913 lectures were given in all the Kentucky summer institutes by an expert furnished by the State Board of Health. In Arkansas the State Department of Public Instruction has cooperated closely with the work of the Rockefeller Sanitary Commission and the State Board of Health. One of the most successful ways of emphasizing the value of special instruction about hookworm disease is to include the subject in the state and county examinations for teachers' licenses. This is done in North Carolina.

Dr. Ferrell remarks that one particularly effective method of the control of hookworm disease by state departments of education has not been fully utilized. Wherever regulation of schoolhouse grounds has been centralized in the hands of the state authorities, sanitary disposal of filth on school premises may be insisted on. Virginia and North Carolina have taken advantage of this opportunity. No schoolhouse in these states will be accepted unless it fulfils state requirements as to sanitation. With a state system of medical inspection and with state authorities empowered to condemn the water-supply, hygienic features of the schoolroom, privies, etc., it would be possible to do much toward the elimination of hookworm and other preventable diseases. Emphasis is laid on the importance of making the school itself a model of sanitation.

It is remarked that the individual teachers have, in most cases, been of great assistance in the hookworm campaign not only in disseminating information on the subject but also in influencing children to submit to examinations. The teachers have usually taken the initiative in being examined and have let the fact be known. The children and, in many cases, the other members of the children's families, have followed the example thus set. Literature on hygiene and sanitation has been distributed from the state department of health and education through the medium of the teachers. Health topics have also been made the subject of essays and of public school debates.

The Syphilis Index

Five years ago B. P. Sormani of Amsterdam pointed out a number of sources of possible error in interpreting the findings with the Wassermann test (Sormani, B. P.: Ned. Tijdschr. v. Geneesk., 1901, ii, 1338; Arch. f. Dermat. u. Syph., 1909, xcviii, 73; Ztschr. f. Immunitätsforsch. u. exper. Therap., 1911, xi, 243; Ned. Tijdschr. v. Geneesk., 1913, i, 1700; Hammarcher, J. F. M.: Ned. Tijdschr. v. Geneesk., 1912, ii, 1203). He emphasized that a correct oversight of the actual condition could be obtained only when the test was applied both qualitatively and quantitatively, the findings then representing the actual condition of the syphilis at the time—a true index. Theoretically, during the first year this index figure should grow constantly larger for a certain length of time and then decline, the slant of the downward slope influenced by the effect of treatment. This theoretical curve was found to prevail with mathematical exactness in his study of 800 serums tested for the syphilis index, and other syphilologists in Holland have confirmed this importance of quantitative findings with the Wassermann test, and declare that the test as a guide to treatment is not to be relied on otherwise. With the ordinary technic the extract itself or the patient's serum or the combination of both may be capable of binding the complement and thus affecting the response to the test.

The specific hemolysis requires a definite amount of complement, but the complement available may vary with the concentration of the blood emulsion and with the complement content of the guinea-pig serum. These sources of error are obviated by using always fresh guinea-pig serum and by titrating beforehand the strength of the complement not only in relation to the hemolytic amboceptor but also to all the other factors involved, namely, the extract and the sheep blood. This titration is done with four sets of five test-tubes, one set with normal serum, one with the serum being examined, one with known syphilitic serum and one control set without serum. The index figure is that representing the smallest amount of extract required for complete hemolysis. By repeated serologic control in this way during the first year it seems possible to secure accurate oversight of the course of the syphilis and to know when to push treatment and when to let up on it according to the actual status. His latest summary of his technic and findings was published in the *München. med. Wchnschr.*, 1914, lxi, 69.

The Stinging Hairs of Plants

Recently Yount (The Journal, Oct. 10, 1914, p. 1315) reported sixteen cases of poisoning from *Jatropha macrorrhiza septemfida*, a small plant of the milk spurge family, growing in Arizona. The toxic properties of a related species, *Jatropha urens* (locally called "ortiga" and "chichicaste") have been discussed by Otto Lutz (*Science*, Oct. 23, 1914, p. 609). This plant, common in pastures along the Pacific Coast of Central America, on account of its poisonous effects has the reputation of being extremely dangerous. All parts, trunk, leaves, flowers and fruits, are covered with long, hard and glossy, stinging hairs, which protect the plant from cattle. The stinging hairs show the same structure as those of the common nettle (of the family *Urticaceae*), though the two plants belong to different families. The poison is produced by a cell of the epidermis which during the growth swells up, forming a goblet-shaped bulb, set into the surrounding tissue. The hair then represents a long tube, the walls of which have incrustations of silicates in the upper part and are calcified in the lower parts, so that they are very brittle and break at the lightest touch. Near the top this cell expands a little, in the form of a miniature hat with very thin walls, so that when touched, it breaks in an oblique direction, forming the point of a cannula, which enters the skin of animal or man. At the same time the poisonous liquid of the cell is discharged into the wound, and produces instantly a local inflammation. The mechanism is, in fact, the same as that of the poison fang of the snakes, and it is also similar to the cannula of the surgeon.

Lutz was poisoned by contact with about ten of the stinging hairs of ortiga, which he estimated to contain only about 0.00005 c.c. of the poison. The inflammation was similar to that produced by nettles, but the pain soon increased, the whole hand began to swell and inside of half an hour had assumed a monstrous shape. Then the left arm commenced to swell, also the right hand and arm, without having been inoculated, yet showed the same abnormal symptoms, and a very strong itching sensation was felt all over the upper part of the body. At about the same time parts of the face, around the eye and nose, swelled considerably. The itching sensation rapidly spread over the abdomen and the lower extremities and red pimples appeared everywhere. In less than an hour the poison had extended over the whole surface of the body, and its entrance into the blood current was indicated by the corresponding physiologic reaction of the interior organs. The palpitation of the heart became extremely accelerated and the mind was soon overcome by an agonizing depression. The respiration seemed to be delayed as if under a great pressure, cold sweat broke out, and the patient gave way altogether, remaining unconscious for more than an hour, except for feverish dreams. After coming back to his senses, he had several fits of copious vomiting, from which it may be surmised that the poison was slowly eliminated from the organism. The weakness, however, remained for several days. Lutz suggests that the only way of allaying the effects of the poison would be to neutralize or precipitate it by means of a prompt application of chlorinated lime, ammonia or sodium permanganate.

Book Notices

Animal Experimentation and Medical Progress. By William Williams Keen, M.D., LL.D., Professor Emeritus of Surgery, Jefferson Medical College, Philadelphia, with an Introduction by Charles W. Eliot, LL.D., President Emeritus of Harvard University. Cloth. Price, $1.75 net. Pp. 312. Boston: Houghton Mifflin Company, 1914.

No one who has followed the discussion on animal experimentation and the opposition to it as a method of scientific research can be unfamiliar with the contributions of Dr. Keen on this subject. Three of the series of educational pamphlets on Protection of Medical Research issued by the American Medical Association in the last few years are from his able pen. In addition, he has contributed many articles to leading magazines and newspapers on this subject. Scientific men desiring this valuable material in convenient and accessible form, as well as laymen earnestly seeking the truth, will welcome the publication in a single volume of Dr. Keen's many contributions on this subject. The introduction by Ex-President Charles W. Eliot of Harvard University emphasizes the scientific value of experimental research and the ethical justification for such efforts for the alleviation of human suffering. Eight of the thirteen chapters in the book are devoted to the discussion of the value of animal experimentation in the development of modern medicine and surgery, the remaining chapters being given to a discussion of antivivisectionists' methods, and corrections of misstatements made by controversial writers on this subject. Not only on account of the high scientific and professional standing of the author, but also by reason of the brilliancy, clearness and fairness of presentation, Dr. Keen's book must long remain a recognized authority on animal experimentation and its value. The student, the teacher, the practicing physician and the philanthropic layman will all find it both interesting and instructive.

Optic Projection. Principles, Installation and Use of the Magic Lantern, Projection Microscope, Reflecting Lantern and Moving Picture Machine. By Simon Henry Gage, Professor of Histology and Embryology, Emeritus, Cornell University, and Henry Phelps Gage, Ph.D. Cloth. Price, $3. Pp. 731, with 413 illustrations. Ithaca, N. Y.: Comstock Publishing Company, 1914.

The increasing use of the stereopticon—or, more correctly, the magic lantern—both as a pastime and for more serious work is a sufficient excuse for this book, if any is needed. While there are a number of works on the subject, most of them are weak in one of two ways: Either scientific accuracy is sacrificed to practicality, or the practical is lost in a mass of abstruse technicalities. "Optic Projection" happily combines scientific accuracy with a simplicity of description that makes reading it a pleasure. The book should be of special value to the physician who is interested in projection apparatus. Whether the magic lantern is being used as a fascinating adjunct to amateur photography, or for more serious work of a scientific nature, great help will be found between the covers of this book. The use of the projection lantern with the electric current, with lime-light, with oil, gas, acetylene and alcohol lamps, is described in detail, separate chapters being devoted to the various illuminants. The projection of images of opaque objects, the preparation of lantern slides and the use of the microscope with the projection apparatus make material for three interesting chapters, while considerable space is given to drawing and photography with projection apparatus. Motion pictures, the projection room and screens and the optics of projection, also are described in turn. The last chapter of the book deals with the use of projection apparatus for demonstrating normal vision and refractive eye defects. An appendix gives a brief history of the development of projection apparatus, with a bibliography on projection. At the end of each chapter is a summary of its subject matter paragraphed in parallel columns telling what to do and what to avoid. The scope of the book is both practical and scientific; the language simple but accurate.

Food Products. By Henry C. Sherman, Ph.D., Professor of Food Chemistry, Columbia University. Cloth. Price, $2.25. Pp. 594, with illustrations. New York: The Macmillan Company, 1914.

This book is a compilation of a well-arranged mass of data concerning what we eat, together with recent scientific investigation and food legislation. After an elementary consideration of the chief constituents of foods, there is a chapter on the principles of food legislation, which embodies study of the food and drugs act, as well as state and municipal control. Following this, beginning with milk, chapters are devoted to various types of foods. The discussions are practical, timely and interesting. Especially important is the author's analysis of the duties of milk commissioners and milk inspectors. The holding method of pasteurization is commended highly, and the "flash" method is condemned. Following the chapter on milk—and the same plan is followed for other subjects—is a list of references to approved literature on the subject, including articles that have appeared in the current volumes of good American publications. There are numerous tables which give in compact form a vast quantity of comparative information concerning the products studied, and there are numerous illustrations and charts showing distribution and process of manufacture of some of the less known materials.

Worry and Nervousness or the Science of Self-Mastery. By William S. Sadler, M.D., Professor of Therapeutics, the Post-Graduate Medical School of Chicago. Cloth. Price, $1.50 net. Pp. 535, with 21 illustrations. Chicago: A. C. McClurg & Co., 1914.

This book may be classed as one of the better type of books written for the neurotic public. There is included in it a wealth of sane advice, and the author's experience is such as enables him to speak from a truly practical point of view. The average individual to whom the book is given will not in all probability give it the real study which its contents deserve. It is questionable whether the neurotic patient can be prevailed on to concentrate his mind on any literature. The book takes a modern sane view of the field of psychanalysis. Some of the illustrations cannot be said to add anything to the value of the work. However, it is a book which, like few others of its class, can safely be recommended to the clientele for which it was prepared.

The World's Social Evil. A Historical Review and Study of the Problems Relating to the Subject. By William Burgess, with a Foreword by Dr. Graham Taylor. Supplementary Chapter on a Constructive Policy, by Judge Harry Olson, Chief Justice, Municipal Court, Chicago. Cloth. Price, $1.50 net. Pp. 401. Chicago: Saul Brothers, 1914.

The foreword is essentially a review of the book. There is much material in the book, but the arrangement is not the best, and the various portions are rather disconnected. Dr. Taylor believes that the public sale of the book is a move in the right direction for only through publicity will the cure come. Physicians will doubt many of the theories presented in the chapter entitled "The War and the Weapons." Scriptural and Shakespearean quotations are not scientific evidence. The book will probably have a wide sale, for what is suppressed or forbidden is by human nature most desired.

Medicolegal

Reporting to Medical Club Patient as Slow Pay

(*McDonald vs. Lee (Pa.), 91 Atl. R. 135*)

The Supreme Court of Pennsylvania affirms a judgment on a verdict directed for the defendant, a physician, who sued for damages for an alleged libel. The court says that it appeared from the record that a number of physicians in Carlisle determined to prepare, for their own use, a list of the names of patients who were slow in making payment for medical services rendered to them. The information was for the benefit of the members of the medical association only, and there was no understanding between them that professional services should be refused to those whose names appeared on the list. The defendant was a member of the association, and she furnished to the secretary, among other names of persons whom she regarded as able to pay, but who were slow in making payments for services, the name of the plaintiff. The list of names thus reported as slow pay was printed by the association, with the number of the physician who furnished the name added. There was nothing on the face of the publication to indicate its purpose, and no one but a member could understand its meaning. The publication was considered confidential, and was limited to the members of the medical association. In the plaintiff's statement of claim there was no averment of any special damage to the plaintiff resulting from the publication, nor was there any proof of such damage. On the trial, at the close of the testimony, the judge gave binding instructions in favor of the defendant, on the ground that the communication was a privileged one, and there was no evidence of malice, nor was any special damage shown. The alleged libel was a communication made in confidence to and for the exclusive use of the members of the Carlisle Medical Club. It had reference only to the manner in which the plaintiff made payment for services rendered. It did not appear that, by reason of the report, credit was refused to the plaintiff, or that any member of the association refused to serve him in a professional way.

It was the duty of the trial court to determine whether or not the words used were libelous per se, or in and of themselves. If they were not, then, in the absence of special damage, binding instructions were proper. The Supreme Court can see no sufficient ground for holding the publication to be libelous per se, or in and of itself. If it became actionable by reason of some special damage occasioned thereby, that fact should have been alleged in the declaration, and proof thereof should have been offered on the trial. It was shown that the words used with respect to the plaintiff did not go beyond imputing to him slowness in the payment of his bills, and under the evidence it could hardly be claimed that he was prompt in the discharge of that duty. The accusation was not so serious in its character as to be fairly regarded as in itself libelous, and, if any injury was occasioned to the plaintiff thereby, it did not appear from the testimony. The good faith of the defendant in making the communication was not questioned. She had an interest in the subject-matter, and the communication was made to persons having a corresponding interest in the subject. In none of the assignments of error does the Supreme Court find anything of substantial merit or that would warrant a reversal of the judgment for the defendant.

Sanatorium Record Kept by Physician

(*Mahegan vs. Faber (Wis.), 149 N. W. R. 397*)

The Supreme Court of Wisconsin says, in this action to recover damages for the death of a man caused by an automobile, that he was a patient at a tuberculosis sanatorium for a time. He was examined by the superintendent of the institution when he was admitted, and from time to time thereafter, and a record was made of such examinations by the superintendent, a physician. The defendant sought to introduce the record in evidence, but the trial court excluded it. The superintendent testified that the record contained the information that he obtained from the patient for the purpose of treating him as a physician. It is quite obvious that the record made by the physician for this purpose was properly ruled out under the statute relating to privileged communications.

Hernia as a Result of a "Fortuitous Event"

(*Zappala vs. Industrial Insurance Commission (Wash.), 144 Pac. R. 54*)

The Supreme Court of Washington affirms a judgment in favor of the plaintiff for a hernia claimed to have been received under circumstances entitling him to relief under the workmen's compensation act. The claim was rejected by the commission on the ground that the hernia, derived from trying to start a heavily loaded truck, was not the result of some "fortuitous event" within the language of the act, which provides that the words "injury" or "injured," as used therein, refer only to an injury resulting from some fortuitous event as distinguished from the contraction of disease. The court says that the sustaining of an injury while using extreme muscular effort in pushing a heavily loaded truck is as much within the meaning of a fortuitous event as though the injury were the result of a fall or the breaking of the truck. To hold with the commission that if a machine breaks, any resulting injury to a workman is within the act, but if the man breaks, any resulting injury is not within the act, is too refined to come within the policy of the act as announced by the legislature in its adoption and the language of the court in its interpretation. The machine and the man are within the same class as producing causes, and any injury resulting from the sudden giving way of the one, while used as a part of any industry within the act, is as much within the contemplation of the act as the other. When the commission admits that the breaking of the truck because of the application of unusual force with resultant injury to the workman is covered by the act, then it must admit that the tearing of muscles or the rupture of fibers, or whatever it is that causes hernia, while exercising unusual effort, is likewise covered by the act; for there can be no sound distinction between external and internal causes arising from the same act and producing the same result. The American cases arising out of acts of this character sustain this court's conclusion that there is no distinction between the accident and a fortuitous event.

Waiver of Privilege by Plaintiff

(*McKenney vs. American Locomotive Co. (N. Y.), 149 N. Y. Supp. 826*)

The Supreme Court of New York, Appellate Division, Third Department, reverses a judgment entered in the plaintiff's favor, for error in excluding the testimony of a physician, sought to be adduced by the defendant, as to the condition of the plaintiff's eye prior to the accident by which he claimed to have been injured. The court says that a physician examined in behalf of the plaintiff may be asked on cross-examination whether he had not treated the patient for the same disease at a prior time. He may also be asked respecting what he learned on a subsequent examination, after his treatment at the time of the accident had ceased. This, of course, is on the assumption that the privilege had been waived by the plaintiff. The plain import of the plaintiff's testimony in this case was that the physician declined to treat his right eye after the accident because of its swollen condition, making it impossible for him to give such treatment. It would seem clear that this testimony would authorize the physician to swear that the eye was not swollen at that time, and also to swear what was its actual condition. Such was the evidence sought to be given by the defendant, and ruled out, as this court thinks, erroneously. That this testimony was very material was shown by the history of the case. The claim was that the injury produced a cataract. That there was a cataract in the eye was admitted. The defense claimed that it was a congenital cataract, one which had been there from birth, and not one caused by the accident. If so, the defendant should not be required to pay for the plaintiff's misfortune.

Society Proceedings.

CHICAGO GYNECOLOGICAL SOCIETY

Meeting Held Dec. 18, 1914

Case of Pseudodiphtheritic Cystitis

The President, Dr. Robert T. Gilmore, in the Chair

Dr. Arthur Curtis: A woman, aged 52, had had three normal births without any complication. A catheter or sound had never been passed. The history showed nothing that would indicate an artificial introduction of the organism into the bladder or kidney. About ten years ago two of her children had a virulent diphtheria. There was nothing of interest in the woman's history until the bladder trouble began, about two years ago. At that time she began to have some distress, but not extremely marked. A year ago last April there was noticed for the first time a marked distress on urination, the passage of small concretions from the bladder, and at quite frequent intervals blood in the urine, intimately mixed at times, and at other times passed without the amount of urine being in proportion to the blood. At the time of her first cystoscopic examination by me three or four months ago, the bladder picture was quite unusual. This was the first time any instrument had been passed into the bladder. Except for one very small area in the fundus, the bladder wall was absolutely covered with a thick membranous deposit. This membrane hung down from the fundus of the bladder, from the anterior walls and sides, just as stalactites hang from the walls of a cave. It was difficult to judge the thickness of the membrane, because it covered the entire bladder wall, but in some places it seemed almost an inch in thickness. The ureteral orifices could not be seen. The membrane could not be dislodged by massage or other manipulations. The bladder was washed out, and pieces of membrane that came away were examined, and showed a culture resembling the diphtheria bacillus. Cultures made from the urine showed a pure culture of the same organism. There seemed no doubt that we had to do with an absolutely pure infection with an organism of the diphtheria group, that is, the pseudodiphtheria bacillus. Vaccines were given for a period of about three months, with only moderately satisfactory results, so far as the symptoms were concerned. Two weeks ago the patient was again examined by cystoscope, at which time it was found that the membrane had disappeared in a great part of its extent. Dr. Watkins then performed a cystotomy. Very deeply in the mucosa of the bladder the examining finger found calcareous crystals, varying in size from ⅛ to ¼ inch in diameter.

DISCUSSION

Dr. Thomas J. Watkins: These crystal deposits were embedded so deeply in the mucous membrane that it was difficult to dislodge them. Some situated superficially were dislodged with the finger, and some were scraped away with a blunt curet, but it did not seem advisable to try to remove them all, on account of the great amount of traumatism which such a procedure would entail. We depended on drainage and the use of benzoic acid to get rid of the deposits that were deeply embedded. In these cases of cystotomies in the female it is difficult to obtain perfect drainage. With an ordinary vesicovaginal fistula it is difficult to prevent all the urine from escaping, and in these cases one may make an incision long enough to get two fingers in, and yet the urine will not all come away. It is a problem, therefore, whether it is better simply to depend on a linear incision, or to remove considerable of the mucous membrane of the vagina, so as to get drainage. It is impracticable to put any drainage material into the bladder, on account of the irritation which results. This woman has been kept on about 20-grain doses of benzoic acid daily, and the urine has become acid and more clear.

Dr. Arthur Curtis: In the majority of instances in which the patient is able to empty the bladder thoroughly, the establishing of drainage through a cystotomy or by irrigation is not ordinarily indicated. Either procedure is indicated only under very exceptional circumstances, such as in cases in which there is retention of urine.

Ovarian Tumors in Pregnancy; Report of Case of a Solid Tumor

Dr. W. C. Danforth: The patient, a woman aged 32, was first seen by me when pregnant about three months. On examination, a mass about the size of a fetal head, hard and freely movable, was found on the left side of the abdomen. The fundus of the uterus was easily palpable about two fingers' breadth above the pubis. Five months earlier the patient had noticed a mass in the lower part of the abdomen, which she said had gradually increased in size. There had been slight bleeding about one week before I first saw the patient. A diagnosis was made of ovarian cyst accompanying pregnancy, and operation advised, consented to, and performed September 9, the tumor being excised. There were no adhesions; the tumor was attached to a pedicle about 4 inches long. It weighed 292 gm., was 10.5 cm. long, 8.5 cm. broad and 6.5 cm. thick. It was of an elongated spheroidal shape, white, firm and hard. The surface was covered by a thin, firm, glistening capsule. The cut surface was even and homogeneous, some tiny spaces being seen, which were probably due to the dropping out of small particles of tissue which had undergone myxomatous degeneration. Microscopically, the mass proved to be a fibromyoma, which had undergone myxomatous degeneration. One portion of the mass was composed of almost pure unstriped muscle tissue. The patient made an uneventful recovery. Nothing was heard of the subsequent labor, but as it was the third pregnancy, and the former labors had been normal, it is supposed that it presented nothing out of the ordinary.

Solid tumors of the ovary are not at all common, and are particularly rare in connection with pregnancy. The prognosis in these cases of ovarian tumor associated with pregnancy, so far as the mother is concerned, depends largely on the location of the tumor, the promptness with which it is recognized, and the skill of those attending the woman. The complication most to be feared is twisting of the pedicle, but these patients almost always may be saved by prompt operation. If an ovarian tumor is recognized during pregnancy, the proper mode of procedure is its immediate removal. The danger to the mother is slight and the risk to the fetus is greatly lessened. Removal by means of an abdominal incision is usually the method of preference, although a few writers urge the vaginal route. The percentage of abortion seems to be much more favorable in the cases subjected to laparotomy than in those subjected to vaginal section. If the case has been handled in any but the most aseptic manner, the tumor should be pushed up out of the pelvis, if possible, and delivery accomplished either spontaneously or operatively through the vagina. Delivery by forcefully extracting the child alongside the mass should never be attempted. If reposition is impossible, puncture or incision and drainage of the tumor, if it be a cystic one, should be done, after which delivery should be accomplished as speedily as possible, and the sac removed by abdominal incision or colpotomy within twenty-four hours. If the case is a clean one, in a well-conducted hospital, the mass may be removed at once by laparotomy and delivery accomplished by hysterotomy or from below at once. In cases in which labor has not begun, or in which there is little or no dilatation, my inclination is toward delivery by cesarean section.

DISCUSSION

Dr. Thomas J. Watkins: It would be a difficult and possibly unwise plan to set down definite rules to follow in the treatment of these cases. It should be very largely a question of determination in individual cases, depending on the facts with which we are all familiar. I think it would be unwise to remove an ovarian cyst as soon as found. The better method would be to let the pregnancy go on to term, remove the cyst, and do a cesarean section at the same time, or do the cesarean section first and then remove the tumor, to facilitate the operative technic. However, this would have to be determined in individual cases by the size of the tumor and local conditions, such as access to a good hospital.

Dr. Rudolph W. Holmes: We should not determine that we should operate in a specified manner on an ovarian tumor. It is not so much the size of the tumor as its location that is going to cause trouble during the pregnancy, or more particularly at the time of delivery. A small ovarian tumor, lodged in the culdesac, adherent, may offer insurmountable difficulties to spontaneous labor, whereas a very large tumor may be so located that without any complications or disturbances, labor will go on to a spontaneous conclusion. Therefore, it is more the location than the actual size of the tumor. There is a great deal of risk of infection in cases of dermoid cyst especially, and it is very difficult at times to determine whether we have to deal with a dermoid or not. On the suspicion of a dermoid, the sooner out the better. The ideal time to remove tumors ordinarily is at the time of labor, if they in any degree suggest interference with labor. If the tumor is to be removed at or about the time of labor, and cesarean section is to be performed, the section should be done first, because immediately with the emptying of the uterus there is a diminution of the blood supply through the vessels of the pelvis, and therefore the hemorrhage, if there is any, is more easy of control.

Dr. Channing W. Barrett: The differentiation of a solid tumor of the ovary or solid tumor of the uterus is an important one, because it is agreed that ovarian tumors should be removed nearly always when found, while fibroids of the uterus, for apparent reasons, should be left alone until they are giving trouble.

Dr. W. C. Danforth: As to the sequence of the operations, cesarean section and removal of the tumor, doing the section first and removing the tumor afterward is, in my opinion, the logical procedure.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

December, CXLVIII, No. 6, pp. 781-936

1 *Comparison of Results of Phenolsulphonephthalein Test of Renal Function with Anatomic Changes Observed in Kidneys at Necropsy. W. S. Thayer, Baltimore, and R. R. Snowden, Pittsburgh.
2 *Pathologic Evidence of Relationship of Gastric Ulcer and Gastric Carcinoma. L. B. Wilson and I. E. McDowell, Rochester, Minn.
3 Studies in Pernicious Anemia. H. C. Moffitt, San Francisco.
4 Anastalsis and Surgical Therapy of Colon. J. M. Lynch and J. W. Draper, New York.
5 *Subcutaneous Injection of Oxygen as Therapeutic Measure. J. McCrae, Montreal.
6 New Growths Involving Terminal Bile and Pancreatic Ducts: Their Early Recognition by Means of Duodenal Content Analyses. B. B. Crohn, New York.
7 *Absorption of Protein and Fat after Resection of One-Half of Small Intestine. W. W. Palmer, Boston.
8 Roentgenologic Method of Differentiating Between Ulcer and Cancer of Stomach and Duodenum. A. F. Holding, New York.
9 *Diastolic and Pulse-Pressure. L. M. Warfield, Milwaukee, Wis.
10 Centrifuge Method to Provide Uniform Standard for Wassermann Readings. B. B. V. Lyon and J. Eiman, Philadelphia.

1. **Phenolsulphonephthalein Test.**—The observations made by Thayer and Snowden show in severe chronic nephritis, a uniformly low phenolsulphonephthalein output which, as a rule, in those instances not interrupted by an acute terminal process, decreases steadily up to the onset of uremia and is nearly or wholly suppressed from a day or two to a month before death. Acute terminal processes which may be unsuspected clinically, are common, and here a sudden diminution in the elimination of phenolsulphonephthalein may come on in cases in which the percentage previously excreted is not so low as to appear menacing. In not a single instance have the authors met with a case of severe chronic nephritis with a good phenolsulphonephthalein elimination. Chronic passive congestion (cardiac disease) results often in a considerable reduction in the two hours' elimination of phenolsulphonephthalein. The results are very variable in individual cases. In marked decompensation the phenolsulphonephthalein output may be reduced to but a trace in two hours; but the excretion is, as a rule, rapidly restored with the reestablishment of circulatory compensation. These observations are in agreement with the experimental studies of Rowntree and Fitz.

In the few instances of chronic nephritis of moderate extent which are included among these cases the excretion of phenolsulphonephthalein was uniformly considerably reduced. All of these cases, however, were associated with chronic passive congestion of considerable extent, but the percentage of phenolsulphonephthalein was lower than might have been expected with an uncomplicated passive congestion. In one instance of acute nephritis and in one instance of pure amyloid disease the phenolsulphonephthalein excretion was greatly reduced. The cloudy swelling observed in acute infections was in some instances associated with considerable reduction in the phenolsulphonephthalein output.

2. **Gastric Ulcer and Carcinoma.**—Of 399 cases of gastric cancer from which the tissue containing the primary lesion was resected in the Mayo clinic, 4.8 per cent. showed ulcer with doubtful cancer in the border, 15.8 per cent. showed ulcer with positive early cancer in the borders only of the lesion, 36.8 per cent. showed ulcers with advanced cancer, while 42.6 per cent. of the cases showed cancer in which the previous ulcer formation is doubtful. Of 46 cases of gastric cancer from which the tissue containing the primary lesion was obtained at necropsy, 1 case (2.2 per cent.) showed an ulcer with doubtful cancer, 7 cases (15 per cent.) showed ulcer with advanced cancer while in 38 cases (82 per cent.) the evidence of ulcer previous to cancer formation is doubtful.

The clinical and pathologic data in relation to the development of gastric cancer or gastric ulcer are in close agreement: (a) with regard to the average age at operation; (b) with regard to the average period of previous history suggestive of ulcer, and (c) with regard to the average number of months of acute history. To Wilson and McDowell it seems probable, from a careful study of the clinical and pathologic evidence of this series of cases, that gastric cancer rarely develops except at the site of a previous ulcerative lesion of the mucosa.

5. Abstracted in The Journal, June 13, 1914, p. 1924.

7. **Absorption of Protein and Fat.**—Absorption studies after resection of the lower half of the small intestine are reported by Palmer. He found the loss of nitrogen in the stools is four or five times that of normal individuals. The loss in fat in the stools is five to six times the normal loss. A high urinary indican, 800 mg. is reported. Ammonia forms a much larger part of the urinary nitrogen than in normal individuals. This is probably due to the extensive putrefaction taking place in the intestine. The success with which a large portion of the intestine may be removed depends to a large degree on the condition of the intestine remaining. This fact Palmer believes to be important and should be considered carefully before extensive resections are undertaken. Palmer says that a diet low in fat and moderately low in protein should be given in cases in which much intestine has been removed.

9. **Diastolic and Pulse-Pressure.**—Of forty-nine cases of myocardial insufficiency at all ages observed by Warfield the average pulse-pressure was 40 mm. The highest was 70, the lowest 15 mm. He has seen cases of myocardial disease with normal blood-pressure figures, five minutes before death. In seventy-five cases of chronic nephritis the average pulse-pressure was 62 mm. The ages of the patients ranged from 10 to 82 years. The highest pulse-pressure, 130 mm. occurred in a man, aged 55 years. A child, aged 10 years, had at one period of her stay in the hospital systolic 186, diastolic 154, pulse-pressure 32. She left the hospital improved and with

130, 80, 50 as her pressure. The most consistent low pulse-pressures were in the advanced cases of pulmonary tuberculosis. Also in typhoid during the third, fourth and fifth weeks, when the fever lasts that length of time, the whole pressure picture is reduced, but the pulse-pressure is reduced relatively more than diastolic pressure.

Warfield has taken for low pulse-pressure any below 30, for high any above 50. The pulse-pressure in aortic insufficiency is always large; in fact, it is usually the largest in any disease. In chronic nephritis the pulse-pressure is always high in the compensation stages. In some forms of arteriosclerosis the pulse-pressure is high. In myocardial insufficiency it varies. If the heart is large there is increased pulse-pressure, if the heart is small there is decreased or normal pulse-pressure. In pulmonary tuberculosis the pulse-pressure is low in the advanced cases. In the early cases the blood-pressure picture, as a rule, is normal or generally decreased. If the heart is large naturally the blood-pressure picture takes on more the form of that in cases of enlarged heart with general depression of the blood-pressure picture. In the acute fevers the pressure picture in the initial stages shows no particular changes. As the cases develop the whole pressure picture as a rule shows a general depression and a low pulse-pressure usually means a badly diseased heart and is an unfavorable prognostic sign.

In general when the systolic pressure is normal, increased pulse-pressure signifies peripheral dilatation. When the systolic pressure is high the increased pulse-pressure is to be regarded as normal and has no special significance. Decreased pulse-pressure or even normal pulse-pressure means marked peripheral constriction, and is therefore, an unfavorable prognostic sign. With low systolic pressure increased pulse-pressure occurs in practically only one condition, aortic insufficiency. With normal systolic pressure gradually decreasing pulse-pressure usually means cardiac failure. The condition is seen often in the later stages of the high systolic increased pulse-pressure cases. With low systolic pressure increased pulse-pressure usually means general cardiac weakness, as seen in febrile conditions or in convalescence from long illnesses or in cachexia of malignant disease.

Annals of Otology, Rhinology and Laryngology, St. Louis

September, XXIII, No. 3, pp. 523-754

11 Results of Operation (Laryngofissure) for Intrinsic Cancer of Larynx. E. Schmiegelow, Copenhagen.
12 Tuberculosis of Middle Ear. H. H. Briggs, Asheville, N. C.
13 Aural Complications in Typhoid. E. M. Holmes, Boston.
14 Cauterization of Mucous Membranes, Particularly of Nasal Mucosa—Protest. E. deW. Wales, Indianapolis.
15 Case of Suppurative Thyroiditis with Perforation of Trachea. 2. Unusual Infection of Epiglottis and Larynx in Child—Tracheotomy—Recovery. C. F. Theisen, Albany, N. Y.
16 Importance of Disturbed Metabolism in Etiology of Secretory Middle Ear Conditions. J. E. Sheppard, Brooklyn.
17 Case of Chronic Meningitis Possibly of Otitic Origin. J. J. Thomson, New York.
18 Vaccines in Chronic Ear Infections. Report of Cases. W. H. Haskin, New York.
19 Two Obscure Cases of Resolving Mastoiditis—Operative Indications. H. B. Blackwell, New York.
20 Report on Twenty-Six Cases of Tonsillectomy, Two and A Half Years After Operation. A. Lewy, Chicago.
21 Double Radical Mastoidectomy in Dementia Praecox with Phenomenal Improvement in Mental and Physical Conditions. G. E. Davis, New York.
22 Furunculosis of Ear with Treatment by Vaccines. H. B. Brown, New York.
23 Labyrinthine Studies. J. A. Babbitt, Philadelphia.
24 Pemphigus Involving Primarily Mouth and Throat. Report of Cases. R. Sonnenschein, Chicago.

Archives of Internal Medicine, Chicago

December, XIV, No. 6, pp. 769-920

25 *Clinical Studies in Caffein. L. Taylor, Cleveland.
26 *Postanesthetic Glycosuria as Influenced by Diet, Body Temperature and Purity of Ether. E. L. Ross, Chicago, and P. B. Hawk, Philadelphia.
27 Complement-Deviation Test with Besredka's Tuberculin and Occurrence of Tuberculosis Among Syphilitics as Diagnosed by this Test. J. Bronfenbrenner, Pittsburgh.
28 *Two Hepatic Functional Tests. W. R. Sisson, Boston.
29 *Effect of Theobromin Sodium Salicylate in Acute Experimental Nephritis, as Measured by Excretion of Phenolsulphonephthalein. H. A. Christian, Boston.
30 Nitrogen Metabolism and Significance of Non-Protein Nitrogen of Blood in Experimental Uranium Nephritis. H. O. Mosenthal, Baltimore.
31 *Family Periodic Paralysis. T. Diller and J. Rosenbloom, Pittsburgh.
32 *Incidence of Status Lymphaticus in Dementia Praecox. H. Emerson, New York.
33 *Artificial Pneumothorax. G. B. Webb, G. B. Gilbert, T. L. James and L. C. Havens, Colorado Springs, Colo.
34 *Effect of Strychnin, Caffein, Atropin and Camphor on Respiration and Respiratory Metabolism in Normal Human Subjects. D. L. Edsall and J. H. Means, Boston.
35 Physiology of Otic Labyrinth. J. G. Wilson, Chicago, and F. H. Pike, New York.

25. **Studies in Caffein.**—Fifteen patients suffering from advanced myocardial diseases were selected by Taylor for this study. Every case showed some sign of broken compensation at the time of the experiment, and thirteen gave evidence of retained body fluid. Dyspnea was present in 14 cases; edema of the extremities in 13 cases; ascites in 10 cases; hydropericardium and hydrothorax, single or double, in 6; tender pulsating liver in 6. Other common symptoms were cough, frontal headache, weakness, dizziness and substernal pain. All patients were kept in bed on a constant diet. Of the 15 cases the results were excellent in 8, moderate in 4, and there was no result in 3. In one of the cases in which there was no result, the vomiting and loss of sleep even on small doses more than balanced any possible good that the drug could have done. All the cases with limited results showed the nervous signs, so the absorption of the drug was assured.

In five of these cases a second admission to the hospital or a return of symptoms while they were still in the instiution made it possible to try the comparative therapy of theobromin sodium salicylate under the same conditions and on the same heart on which the caffein action had been tested. Its action on the urinary outflow is more prompt than that of caffein and the diuresis is larger. The theobromin sodium salicylate action is equally well sustained and usually at a higher level than the caffein. When caffein has a depressing effect on the vasomotor system and lowers the blood-pressure, theobromin sodium salicylate first elevates the pressure and then later lowers it.

Eighty grains a day is a normal clinical dose. Patients will tolerate this dose easily. Not only is the theobromin sodium salicylate action prompter, much stronger and equally well sustained, but it exhibits none of the gastric and nerve disturbances attendant on caffein. In cases with edema, the diuretic effect of caffein may be taken safely as a sign of an improved mass movement of blood, which is the result desired. From this point of view it is evident that small doses are not adequate. The best results are obtained with full doses.

Therefore, Taylor concludes that in myocardial insufficiency with retained body fluid, caffein causes: a moderate increase in the urine output with a proportional loss of body weight. This increase reaches its maximum on the fourth day; a drop in both the systolic and diastolic blood-pressures which may stand in a causal relation to the diuretic coefficient, contrary to the usual teaching; a slight (3.6 per cent.) temporary rise in the pulse-rate, but no permanent change in either the pulse or respiratory rate; a moderate relief of the cardiac symptoms; the constant appearance of distressing nervous and gastric symptoms. The clinical diuretic action of caffein may be better performed by large doses of theobromin sodium salicylate without the unpleasant side effects.

26. **Glycosuria as Influenced by Diet, Body Temperature and Purity of Ether.**—It is claimed by Ross and Hawk that the reduction of body temperature during ether anesthesia does not of itself cause glycosuria. The reduction to a minimum of the oxygen content of the ether vapor inhaled does not cause glycosuria. The response of the animal body to "dehydrated" ether (that is, ether from which aldehyd and other impurities have been removed) in so far as glycosuria is concerned, is no different from the response to the ether ordinarily used for anesthetic purposes. The inhalation of ether administered by the cone method causes a more pronounced reduction in body temperature than does the

inhalation of the same kind of ether for a similar period when administered by the so-called improved method. The dryness of the ether vapor in the cone method is the contributing factor. The inhalation of either "dehydrated" or common ether for a period of two hours by dogs fed a carbohydrate-free diet was in every instance accompanied by glycosuria. When the same animals were fed a mixed diet glycosuria was not in evidence. There was no evidence of "emotional" glycosuria, the factor regulating the occurrence or non-occurrence of glycosuria in every instance being a dietary one.

28. **Two Hepatic Functional Tests.**—The results of Sisson's studies with phenoltetrachlorphthalein show that the normal output of the dye in the feces is about 35 per cent. The inapplicability of the test to cases with evidence of biliary stasis makes its scope limited. The galactose test, however, may be of great value in differentiating icterus catarrhalis from other hepatic conditions showing biliary stasis. It is rarely positive in cases of cirrhosis of the liver showing no evidence of biliary stasis. There is no apparent relation between the excretion of galactose and phenoltetrachlorphthalein. Judging from the experimental studies and from the clinical observations noted up to this time, it seems to Sisson that a more exhaustive application of the test is justified. It offers a means of diagnosing certain cases of cirrhosis of the liver and of neoplasms of this organ. The results obtained may also be of some prognostic value.

29. **Effect of Theobromin Sodium Salicylate in Acute Experimental Nephritis.**—So far as renal function may be judged from phenolsulphonephthalein excretion in acute experimental nephritis produced by uranium in the rabbit, Christian says, there is no evidence that theobromin sodium salicylate exerts any constant beneficial action. In the severer forms there is almost no evidence of beneficial action; in the very mild forms there is occasionally evidence of beneficial action, but this is too inconstant to justify the conclusion that theobromin sodium salicylate really improves renal function even in the very mild forms of acute nephritis. The results obtained in the rabbit are in accord with the common clinical teaching that diuretics are not indicated in acute nephritis in man; but they are no proof of the correctness of this teaching, for results obtained in rabbits cannot be directly read in terms of man. However, they would seem to lend some further support to the view based on clinical observation that diuretics are not indicated in acute nephritis.

31. **Family Periodic Paralysis.**—The clinical history and a metabolism study of seven days' duration on the Folin diet is described by Diller and Rosenbloom in a case of family periodic paralysis. They studied the nitrogen metabolism and urinary nitrogen partition (total nitrogen, urea nitrogen, ammonia nitrogen, uric acid nitrogen, creatinin nitrogen and undetermined nitrogen), the sulphur metabolism and urinary sulphur partition (total sulphates, inorganic sulphates, ethereal sulphates and neutral sulphur), the calcium, magnesium, phosphorus and fat metabolism. The only decided metabolic changes found was a marked decrease in the amount of creatinin and creatinin nitrogen excreted in the urine and a marked increase in the amount of undetermined nitrogen of the urine.

32. **Incidence of Status Lymphaticus in Dementia Praecox.**—Emerson examined 208 men from 16 to 50 years of age definitely classed as having dementia praecox, among whom sixty-one were found to exhibit the typical physical characteristics of status lymphaticus (29.3 per cent.); 147 were found to be physically normal (70.6 per cent.).

33. **Artificial Pneumothorax.**—The authors' report deals with experiences and results with artificial pneumothorax, and with a series of gas analyses and animal experiments in regard to the use of air or nitrogen. During the past two years the attempt has been made to produce an artificial pneumothorax in eighty-three patients with advanced pulmonary tuberculosis. In two cases the method of Brauer was attempted, in all others that of Forlanini. The apparatus and method of procedure were practically similar to those so well described by Robinson and Floyd, and by Hamman and Sloan.

The authors conclude that the procedure of artificial pneumothorax is of undoubted value in many advanced cases of pulmonary tuberculosis. The dangers in its application with proper precautions would seem negligible. The necessity for keeping up the compression over a long period of time is a serious drawback, as is also the possible annoyance to the patient of the development of fluid. They urge that for the present every known method should be very thoroughly tried out before suggesting pneumothorax to patients. The compression should be kept up for probably several years. The authors' experiments on monkeys showed that little if any advantage is to be gained by the employment of nitrogen rather than atmospheric air for the production of artificial pneumothorax.

34. **Effect of Strychnin, Caffein, Atropin and Camphor on Respiration.**—Edsall and Means summarize their findings as follows: Strychnin: No action on the respiratory center or circulation, possibly an increase in metabolism. Caffein: Stimulation of respiratory center, moderate increase in metabolism, no effect on circulation. Atropin: Marked increase in metabolism, in doses large enough to cause the classical action on the circulation. Marked drop in the calculated values for alveolar carbon dioxid and rise in alveolar ventilation. Whether these latter effects are due to stimulation of the respiratory center or to changes in the dead space is not clear at the present writing. Camphor: The results not agreeing, no conclusions are justifiable.

Arizona Medical Journal, Phoenix

December, II, No. 11, pp. 7-19

36 Year's Experience with Pericolic Membranes. E. C. Moore, Los Angeles.
37 Gastro-Enterostomy, Its Indications and End Results. S. D. Swope, Deming, N. Mex.

Boston Medical and Surgical Journal

December 24, CLXXI, No. 26, pp. 955-994

38 Forlanini's Artificial Pneumothorax. G. M. Balboni, Boston.
39 Action of Pituitrin on Acute Heart Failure and Incompensate Heart Lesions. E. Zueblin, Baltimore.
40 Mastitis in Pregnancy. Report of Case. B. R. Whitcher, West Somerville.

December 31, No. 27, pp. 995-1026

41 *Analysis of Recoveries at Psychopathic Hospital, Boston. T. H. Haines, Columbus, O.
42 *Subnormal Temperature in Tuberculosis. A. K. Stone, Boston.
43 Coccygodynia: Causes and Treatment. R. Duffy, Tampa, Fla.

41. **Analysis of Recoveries at Psychopathic Hospital.**—A second series of 100 cases, considered especially from the point of view of psychopathic nursing of brief manic-depressive excitements and of hysteric and other deliria is presented by Haines. Forty persons about 40 years of age recovered. There were three in the fifth decade who were not alcoholic, and four above 50 who were not alcoholic. The list of the second 100 recoveries includes 111 admissions and 106 recoveries. Nine patients were admitted twice and one three times. Eighty-two of the total number of admissions are psychoses directly due to alcohol.

Of the alcoholics only 21 per cent. were females, and all these were married, while only 45 per cent. of the alcoholic males were married. Alcoholic hallucinosis requires, on the average, twice the time necessary for delirium tremens to clear up. Eighteen and 7 per cent. of all "recoveries" among alcoholics came voluntarily to the hospital. Twenty-six of these 106 "recoveries" or 24 per cent. are from psychoses not attributable to alcohol. The large number of patients suffering from serious disturbances of metabolism and at the same time insane but recoverable, as shown by the outcome, demonstrates the unique field of service of psychopathic nurse and psychopathic hospital. Anomalous Wassermann reactions, in some cases in which the psychoses seem in no ways attributable to syphilitic infection, raise interesting problems in psychiatry. Others, in which alcohol and syphilis seem to work together, open up problems in the permutations of the symptoms of two groups.

42. **Subnormal Temperature in Tuberculosis.**—In tuberculosis cases, Stone says that at a certain period of the disease, usually succeeding the active febrile stage, there is often a period when the temperature curve shows marked excursions in the subnormal, the temperature at no time rising above 98.6 degrees, and rarely fully reaching this point. The patients during this period of subnormal temperature are usually improving and making distinct gains, but it takes very little to give them exacerbations of real febrile temperature, lasting from a few hours to a few days. This period of subnormal temperature may last for weeks, the curve becoming less and less irregular if the improvement continues, and finally becoming a continuous straight line at 98.6 degrees. Until this latter condition is found, Stone does not allow his patients much more latitude in their movements than while in an active febrile stage. When there is a constant variation of the temperature from the normal, it means that there is a pathologic process going on in the body, which may not be accounted for; that, however, is ignorance, and not because the patient is in a truly normal condition. The persistent subnormal temperature has become to Stone a part of the regular course of a case of tuberculosis that is on the whole progressing favorably. It does not have prognostic value, as a patient may from this stage again become febrile; although on the whole the tendency is, under favorable conditions, for the temperature curve to become a practically straight line.

Florida Medical Association Journal, Jacksonville

December, I, No. 6, pp. 161-192

44 Acute Inflammation of Pelvic Organs. G. R. Holden, Jacksonville.
45 Pathologic Vaginal Discharges. T. S. Field, Jacksonville.
46 *Unsuccessful Attempt to Provoke Vomiting. Report of Case. F. J. Walter, Daytona.
47 Should Physician Dispense His Own Remedies? A. H. Freeman, Starke.
48 Facial Paralysis Occurring in Treatment of Syphilis. J. L. Kirby-Smith, Jacksonville.

46. **Unsuccessful Attempt to Provoke Vomiting.**—After using an esophageal expanding hair probang unsuccessfully four times in his case Walter decided to try emesis, hoping to dislodge the substance in this way. Titillation of the throat and epiglottis was tried several times without result. The patient was given an emetic dose (4 to 6 drams) of syrup of ipecac. In thirty minutes he was given 20 grains of zinc sulphate, followed in fifteen minutes by a large tablespoonful of pulverized mustard in an equal quantity of lukewarm water. In ten minutes 20 grains of zinc sulphate was repeated and in five minutes more mustard (amount not certain). At this time two pints of lukewarm water were given, all of which produced no emesis. In ten minutes 1/10 grain of apomorphin hydrochlorate was subcutaneously injected with no result, except in fifteen minutes a tendency to be a bit stupid. A second dose of apomorphin of 1/10 grain was given without the slightest nausea.

Walter washed the stomach out with two quarts of warm water, hoping at the time for some reaction by means of the tube. The man became weak, relaxed and was perspiring from the apomorphin and the ordeal. He was put to bed and allowed to sleep. In one hour and thirty minutes he awakened gulping (not vomiting) up a piece of tough, irregular roughened cartilage the size of an egg with entire relief. This case is of interest, first, because so large a mass could exist and not be disturbed by probang or stomach tube unless a diverticulum were present (symptoms of which there were none other than the above); second because of the quantity and the variety of emetics given without the slightest result, and third because of the manner in which the cartilage was finally ejected.

Georgia Medical Association Journal, Augusta

December, IV, No. 8, pp. 227-255

49 Two Cases Presenting Symptoms of Mucous Colitis. G. P. Huguley, Atlanta.
50 Perforating Appendicitis—Surgical Technic After Treatment. R. R. Kime, Atlanta.
51 Posture of Human Body: Its Relation to Health and Efficiency. F. G. Hodgson, Atlanta.
52 Keratitis Parenchymatosa. M. M. Stapler, Macon.
53 Case of Taenia Nana. J. B. Ward, Macon.
54 Pernicious Malarial Fever. T. D. Coleman, Augusta.

Journal of Cutaneous Diseases, New York

December, XXXII, No. 12, pp. 821-884

55 Case of Miliary Lichen Planus with Unusual Clinical and Pathologic Findings. I. R. Pels, Baltimore.
56 *Lesions Produced by Bite of "Black Fly" (Simulium Venustum). J. H. Stokes, Ann Arbor, Mich.

56. **Lesions Produced by Bite of Black Fly.**—The principal positive result of the work detailed by Stokes has been the experimental reproduction of the lesion produced by the black fly in characteristic histologic detail by the use of preserved flies. The experimental lesions not only reproduced the pathologic picture, but followed a clinical course, which in local symptomatology especially, tallied closely with that of the bite. This the author interprets as satisfactory evidence that the lesion is not produced by any living infective agent. The experiments performed do not identify the nature of the toxic agent. Tentatively they seem to bring out, however, the following characteristics: The products of alcoholic extraction of flies do not contain the toxic agent. The toxic agent is not inactivated by alcohol, is not destroyed by drying fixed flies, is not affected by glycerin, but is, if anything, more active in pastes made from the ground fly and glycerin, than in the ground flies as such. It is rendered inactive or destroyed by hydrochloric acid in a concentration of 0.25 per cent., is most abundant in the region of the anatomic structures connected with the biting and salivary apparatus (head and thorax), is not affected by a 0.5 per cent. solution of sodium bicarbonate nor by exposure to dry heat at 100 C. for two hours. It is destroyed or rendered inactive in alkaline solution by a typical hydrolytic ferment pancreatin. Incomplete experimental evidence suggests that the activity of the toxic agent may be heightened by a possible lytic action of the blood serum of a sensitive individual, and that the sensitive serum itself may contain the toxic agent in solution.

The following working theories have suggested themselves to Stokes: First, the toxin may be an alkaloidal base, toxic as such, and neutralized after injection by antibodies produced for the occasion by the body. Second, it is conceivable that the injected saliva of the fly does not contain an agent toxic as such; that, like many foreign proteins, it only becomes toxic when broken down. Third, lytic agents in the blood serum may play the chief rôle in the liberation of the toxic agent from its non-toxic combination. This view is the one to which the author inclines as the one which most adequately explains the phenomena. Fourth view, that the initial injection of a foreign protein by the fly (namely, with the first bite) sensitizes the body to that protein.

Journal of Nervous and Mental Disease, Lancaster, Pa.

December, XLI, No. 12, pp. 745-818

57 Autonomic or Vegetative Nervous System. W. Timme, New York.
58 Normal-Looking Brains in Psychopathic Subjects. E. E. Southard and M. M. Canavan, Boston.

Journal of Outdoor Life, New York

December, XI, No. 12, pp. 353-383

59 Review of Cure at a Sanatorium. A. A. Pleyte, Wales, Wis.
60 Making Convalescents Pay by Pheasant Raising. J. W. Talbot, South Bend, Ind.
61 What, How and Why of a County Hospital. E. A. Moree, New York.
62 Making Disease Prevention Popular. W. D. Thurber, Indianapolis.
63 Referendum Campaigns for County Tuberculosis Hospitals. G. J. Nelbach, New York.

Kansas Medical Society Journal, Topeka

July, XIV, No. 7, pp. 249-286

64 History of Obstetrics. L. V. Sams, Topeka.
65 Good Result Following Elliott Trephine Operation for Acute Glaucoma. H. C. Markham, Parsons.
66 What Is Wrong with Medical Profession of Kansas. C. S. Huffman, Columbus.

August, No. 8, pp. 287-324

67 Treatment of Some Effects of Roentgen Ray Burns. J. C. McClintock, Topeka.
68 Prostatic Hypertrophy. M. Trueheart, Sterling.
69 Chronic Intestinal Stasis. J. T. Axtell, Newton.

70 Medical Legislation and Other Things Needed in Kansas. E. C. Duncan, Fredonia and J. W. McGuire, Neodesha.

November, No. 11, pp. 403-440

71 Pseudoleukemia. E. L. Uhl, Baldwin.
72 Acute Otitis Media. J. F. Gsell, Wichita.

Maine Medical Association Journal, Portland

September, V, No. 2, pp. 57-84

73 Air We Breathe. T. Hubbard, Toledo, O.

October, No. 3, pp. 85-124

74 Treatment of Diseases of Vegetable Parasitic Origin by Deep Muscular *Injections* of Mercury. B. L. Wright, U. S. Navy.

November, No. 4, pp. 125-160

75 Medical Inspection of Schools in Auburn, H. E. Hitchcock, Auburn.
76 Heart Stimulation. C. H. Hunt, Portland.
77 Early Diagnosis of Pulmonary Tuberculosis. W. E. Gray, Milltown, N. B.
78 Comments on Hospital Abuses. S. F. Greene, Solon.

New York Medical Journal

December 26, C, No. 26, pp. 1245-1280

79 Hysteric Astasia-Abasia Occurring in Acute Multiple Neuritis. C. W. Burr, Philadelphia.
80 Physical Defects Factor in Cause of Crime. E. W. Lee, New York.
81 Physical Defects and Crime. J. H. Branth, New York.
82 Intracapsular Extraction. C. B. Meding, New York.
83 Radium and Roentgen Therapy Facilitated by Double Coated Adhesive Plaster. S. Tousey, New York.
84 Gonococcus Infection in Women. J. J. France, Portsmouth, Va.
85 Syphilis in Rôle of Malignant Neoplasms. J. C. O'Day, Portland, Ore.
86 *Wounds of Arteries.* S. Erdman, New York.
87 Industrial Sanitary Standards. G. M. Price, New York.
88 Tuberculosis of Tongue. J. Weinstein, New York.

January 2, CI, No. 1, pp. 1-48

89 Pneumococcus Infection and Immunity. R. I. Cole, New York. (To be continued.)
90 Psychical Aspect of Syphilis. H. G. Klotz, New York.
91 Appendicitis Under Field Service *Conditions.* A. W. *Williams*, Washington, D. C.
92 Psychology of War. W. L. Howard, Westboro, Mass.
93 Drug Habit and Legislation. J. B. Woodhull, North Bennington, Vt.
94 Acute Articular Rheumatism. A. C. Reed, Changsha, China.
95 Healed Tuberculosis of Tongue, Larynx and Lungs. F. M. Pottenger, Monrovia, Cal.
96 Spontaneously Precipitated Albumin in Urine. J. Rosenbloom, Pittsburgh.
97 Primary Nasal Diphtheria. H. A. Schatz, Philadelphia.

New York State Journal of Medicine

December, XIV, No. 12, pp. 555-594

98 Present Status of Vaccine Treatment in Acute Suppurative Infections. C. Norris, New York.
99 *Some Methods in Treatment of Puerperal Infection *which* Have Given Improved Results. R. R. Huggins, Pittsburgh.
100 Retrodeviations of Uterus in Puerperium and in Nulliparous Women. F. C. Goldsborough, Buffalo.
101 *Care of Abdomen *in* Infancy and Childhood. E. M. Mosher, Brooklyn.
102 *Fracture *of* Neck of Femur: Its Treatment. J. B. Walker, New York.
103 Subacute and Chronic Enteric *Infection.* E. H. Bartley, Brooklyn.
104 Glaucoma from Operative Standpoint. P. A. Callan, New York.
105 Causes and Treatment of Chronic Conjunctival Affections in Childhood. A. W. *Williams*, New York.
106 Management of Abnormal Obstetric Cases. W. T. Getman, Buffalo.

99. Abstracted in The Journal, June 6, 1914, p. 1839.

101. **Care of Abdomen in Childhood.**—An infant under 6 months of age, according to Mosher, should not find out that there is any posture of the body other than the horizontal, and his acquaintance with the out-of-door world would be better made from a basket on a balcony, fire-escape, or even window (safely caged), than from a bumping baby carriage. When the abdomen is sufficiently developed to safely permit the sitting posture, and the child shows an interest in things around him, some modification of the "go-cart," supplied with proper springs and a seat on which a child can balance easily, is better than the present baby carriage into the soft cushions of which he sinks, losing and gaining his equilibrium as his flexible little spine wobbles hither and yon. Habitual physical quiescence with little mental entertainment not only makes happy babies, but tends to keep them normal. Little is needed for the development of the abdominal wall at this time, outside of perfect freedom of motion during waking hours. Petticoats, pinning blankets, and diapers should be so loosely fastened that they cannot interfere with the movements so important to a baby's digestive apparatus.

Mosher emphasizes that it is of great importance that infants shall early learn to lie on the abdomen as easily as on the back: no one position, however, should be permitted to become habitual. From the time a child has learned to walk easily, there is little danger of abdominal injury until school life begins. His play instinct keeps him constantly changing his posture and varying his movements. There are a few kinds of play, however, that may prove injurious. Those which encourage the sitting posture on the floor are not desirable nor are those which demand a stooping posture.

Many of the garments for children of school age are so shaped that they tend to produce round shoulders and flat chests with their accompanying encroachment on the abdomen. The American Posture League is taking up the subject of children's garments, and has already perfected a model known as the "Good Posture Suit," for boys, which carries the American Posture League label. Gymnastic exercise with especial reference to the development of the chest and abdomen is of great importance during the school life of children.

102. **Fractures of Neck of Femur.**—The following procedure is employed by Walker: A careful examination is made of the patient's condition in order to determine the wisdom of giving an anesthetic for a period of twenty minutes, this time being required for the application of the plaster bandage. As soon as the anesthetic permits complete relaxation, a gentle examination is made of the fracture and frequently crepitus is found in those patients in whom impaction is thought to be present.

The patient is lifted to a pelvic support, preferably furnished with a perineal bar for counter pressure, the extended limbs being supported by assistants. The assistant holding the uninjured limb abducts it to the normal limit in order that it may serve as a guide, and incidentally to fix the pelvis. The injured limb is first flexed and rotated sufficiently to disengage soft parts that may be interposed between the fragments. It is then completely extended, and the assistant, by direct manual traction, overcomes the shortening, as demonstrated by measurement and by the relation of the trochanter to Nélaton's line, at the same time correcting the outward rotation. Still maintaining steady traction, he then adducts the limb to correspond with its fellow, the operator meanwhile supporting the joint and lifting the thigh upward. The pelvis should now be level and the extended limbs in exact correspondence in every particular. A plaster spica is then applied from the axilla to the toes. This should be carefully adjusted about the pelvis and trochanter. It should completely cover the buttock and be heavily reinforced beneath the joint and thigh, that it may be unyielding to pressure and therefore effective as a posterior splint to hold the limb at its proper plane.

The prolonged plaster bandage maintains complete immobilization during the period of repair, overcoming the shortening and adduction. The adduction prolonged during four to six weeks is of marked importance in aiding the future ability to walk without impairment or limitation of motion. It further protects the patient from much unnecessary suffering on movement, and renders him far more comfortable.

Northwest Medicine, Seattle, Washington

December, VI, No. 12, pp. 359-392

107 Modern Medicine and Its Social Responsibilities. F. R. Green, Chicago. (To be concluded).
108 Physician and Public Health. E. R. Kelley, Seattle.
109 Political and Economic Aspects of Municipal Sanitation. J. S. McBride, Seattle.
110 *Causation and Prevention of Goiter. J. R. Brown, Tacoma.
111 *Prevalence and Distribution of Goiter in *Washington*, D. C. Hall, Seattle.
112 Treatment of Goiter. T. M. Joyce, Portland, Ore.
113 Medical Treatment of Goiter. C. W. Sharples, Seattle.
114 Id. F. Epplen, Spokane.

110. **Causation and Prevention of Goiter.**—Reasoning from an abundant clinical experience, it seems reasonable to Brown to suppose that the infective agent or exciting material that causes enlargement of the thyroid gland does not act directly on the gland, but affects the system in such a manner that the gland must hypertrophy or enlarge to satisfy the demand for its peculiar internal secretion. He is convinced that, when the thyroid begins to enlarge there is a state of deficiency of thyroid secretion—hypothyroidism. Thyroid feeding improves the health and reduces in a very marked manner the size of the gland. The prevention of goiter would then resolve itself to purification of domestic water supplies by installation of hypochlorite plants and, perhaps, addition of iodin in minute doses to water for household consumption in goitrous communities. Focal infections of teeth, tonsils, adenoids and sinuses of head should receive prompt and careful treatment, especially in the young. Brown urges that careful search be made for hypothyroidism in the children, as thyroid feeding, if instituted in time, would probably prevent any marked hypertrophy of the thyroid.

111. **Prevalence and Distribution of Goiter in Washington.**—Hall attempted to classify the 3,339 students who entered the University of Washington during the past five years, according to the condition of their thyroid glands. This series consists of 2,086 men with the average age of 20 years and 5 months, and 1,253 women with the average of 19 years and 3 months. Of the 1,253 women, 388 were affected, or practically 31 per cent., as follows: 272 classed as perceptible, or 13.03 per cent.; 92 classed as medium or 4.43 per cent.; 10 classed as large, or 0.48 per cent. Of the 1,253, 388 were affected, or practically 31 per cent., as follows: 294 classed as perceptible, or 23.45 per cent.; 85 classed as medium, or 6.79 per cent.; 9 classed as large, or 0.7 per cent. Averaging men and women together it gives 24.40 per cent., or about one in every four.

Of the nineteen classed as large, four had a marked exophthalmus, one man and three women. In a series of 343 women, of whom 83 were affected, ten, or 2.9 per cent., gave a history of the malady in the family. As to the distribution of the malady, it bears a rather constant relationship to certain geologic conditions. From the standpoint of the soil in the state of Washington, it seems to be confined to that part in which the marine deposits of the eocene and myocene ages are still exposed, namely, all of the state excepting the southeastern corner consisting of the nine contiguous counties. From these nine counties eighty-two examinations were made with only three cases affected, or a percentage of 3.6. The soil of this area is alkaline, but the most interesting fact is that this entire area is covered with volcanic ash and lava. Thus the original surface is covered with a sterile mantle.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

December, XIX, No. 6, pp. 235-288

115 Nerve Injuries Due to Bony Abnormalities. F. M. Hanes, Richmond.
116 Midwife Problem in Virginia. W. A. Plecker, Richmond.
117 Action of Spartein. G. E. Pettey, Memphis, Tenn.

Ophthalmic Record, Chicago

December, XXIII, No. 12, pp. 595-648

118 New Operative Procedures for Shortening and Lengthening Muscles. R. O'Connor, Oakland, Cal.
119 Use of Invisible Bifocals in Treatment of Convergent Strabismus (Esotropia) in Little Children. W. Reber, Philadelphia.
120 Operation for Squint. C. Worth, England.
121 Insufficiency of Convergence: Its Diagnosis and Treatment. E. Landolt, Paris.
122 Extra-Ocular Tendon Lengthening and Shortening Operations which Enable Operator to Regulate the Effect. F. C. Todd, Minneapolis.

Pennsylvania Medical Journal, Athens

December, XVIII, No. 3, pp. 171-250

123 Significance of Increased Tension of Eyeball. S. D. Risley, Philadelphia.
124 Present Status of Our Knowledge of Shock. J. M. Wainwright, Scranton.
125 *Present Place of Vaginal Hysterectomy in Pelvic Disorders. Fifty Consecutive Cases. G. E. Shoemaker, Philadelphia.
126 Experimental Work on Relation of Iron and Iron Metabolism to Anemia. J. H. Austin, Philadelphia.
127 Correction of Abnormal Blood-Pressure. A. B. Hirsh, Philadelphia.
128 Are We Exaggerating Dangers of High Arterial Pressure? D. Riesman, Philadelphia.
129 Heart in Acute Infections. R. N. Willson, Philadelphia.
130 Ductless Gland Irregularities in Backward Children. E. B. McCready, Pittsburgh.
131 Renal Surgery. W. D. Hamilton, Columbus.
132 Light in Industries. E. Jackson, Denver.

125. **Vaginal Hysterectomy in Pelvic Disorders.**—With a very few exceptions of combined operation the only patients now recollected by Shoemaker who have lived and remained well ten to eighteen years after operation for undoubted malignant disease of the uterus, have been a few private patients who have had vaginal hysterectomy, preceded by the thorough use of the actual cautery, and supplemented by such use of hysterectomy clamps as has resulted in necrosis and discharge of much parametrial tissue during convalescence. The longest done was in February, 1896, or eighteen years ago, and the patient is still in good health. The pathologic diagnosis of carcinoma was made by Dr. Henry Cattell. Another patient aged 50, with squamous epithelioma of cervix, pathologic diagnosis made by Dr. Edsall, was operated on in 1898. Examined fourteen years later, she was well. One patient, aged 72 years, with epithelioma of cervix, lived ten years longer and died of old age without signs of recurrence. Another, with carcinoma of endometrium operated on fourteen years ago, is now well, her physician reports. Another was operated on twelve years ago and is now in perfect health. Pathologic diagnosis made by Dr. Beyea, was malignant adenoma of endometrium. Shoemaker states that these patients were seen very early and were cauterized, or they would not have done so well.

Public Health Journal, Toronto

December, V, No. 12, pp. 707-751

133 Use of Fermentation Test in Milk Examination. J. Race, Ottawa.
134 Medical Inspection of Schools in Edmonton, Alberta. T. H. Whitelaw, Edmonton.
135 How Can Average Old Stable Be Most Cheaply Fitted for Production of Clean Milk? J. B. Hollingsworth, Ottawa.
136 Nerve Block, Public Health and Tuberculosis. J. Grant, Ottawa.
137 Principles of Criminal Anthropology. A. MacDonald, Washington, D. C.

South Carolina Medical Association Journal, Seneca

September, X, No. 9, pp. 636-666

138 Rabies Situation in South Carolina. F. A. Coward, Columbia.
139 Relation of Domestic Water Supplies to Disease. F. L. Parker, Charleston.
140 Etiology of Pellagra. A. E. Vipond, Montreal, Canada.

October, No. 10, pp. 667-698

141 Spartanburg's Appreciation of Pellagra Commission's Work. J. J. Lindsay, Spartanburg.
142 Internal Secretions—Promising Field in Therapeutics and Diagnosis. G. F. Klugh, Cross Hill.
143 Additional Experiments with Salvarsan and Neosalvarsan in Treatment of Tuberculosis. T. Maddox, Union.
144 Caloric Feeding in Infancy. R. M. Pollitzer, Charleston.
145 Case of Internal Hydrocephalus with Specimen. G. T. Tyler, Greenville.

November, No. 11, pp. 699-731

146 Child and Sanitation in South Carolina. F. D. Rogers.
147 Abuse of Cathartics in Acute Abdominal Conditions. G. H. Bunch, Columbia.
148 Contagion and Disinfection. W. Egleston, Hartsville.
149 Intraspinous Administration of Salvarsanized Blood Serum. W. R. Barron, Columbia.
150 Cancer of Breast. A. E. Baker, Charleston.

Tennessee State Medical Association, Nashville

October, VII, No. 6, pp. 227-270

151 Antityphoid Vaccination in Children. W. Litterer, Nashville.
152 Present Status of Blood-Pressure. F. A. Jones, Memphis.
153 Treatment of Eclampsia. J. M. Trout, Knoxville.
154 Elliott Trephining Operation in Surgical Treatment of Glaucoma. H. Wood, Nashville.
155 Work of State Board of Medical Examiners. A. McCoy, Jackson.
156 Means of Resuscitation for Alarming Conditions Brought About by Anesthetic Agents. E. M. Sanders, Nashville.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Dublin Journal of Medical Science

December, III, No. 516, pp. 401-478

1 Diligence and Professional Success. F. C. Dwyer.
2 Threshold of Disease. J. A. Lindsay.
3 Therapeutic Value of Pituitary Extract. C. O'Brien.

Edinburg Medical Journal

December, XIII, No. 6, pp. 441-519

4 *Primary New Growths of Mediastinum. J. N. M. Ross.
5 Perforated Gastric Ulcer. C. W. Cathcart, A. Thomson, H. J. Stiles and Others.
6 Nutritive Diseases of Infancy. J. S. Fowler.

4. **Primary New Growths of Mediastinum.**—Sixty cases were studied by Ross, 85 per cent. were found in persons over the age of 30 years and 70 per cent. between the ages of 30 and 50 years. The extremes were 18 and 70 years. Men were affected much more frequently than women, the proportion being 2.15:1. The sex, however, seemed to have a determinating factor as to the variety of tumor found. While in both sexes sarcoma was the commonest form, in females carcinoma was three times as frequently met with as in males. Males: Carcinoma, 4 cases; sarcoma, 33 cases; unclassified, 4 cases. Females: Carcinoma, 6 cases; sarcoma, 11 cases; unclassified, 2 cases. Only 23.5 per cent. gave a definite malignant family history, while in 31.6 per cent. there was a definite tuberculous family history. In 6.6 per cent. there was both a malignant and a tuberculous history. In 41.6 per cent. definite post-mortem evidence of tuberculosis was found within the chest, but in only two cases were tubercle bacilli actually demonstrated in the sputum.

The common seat of origin was the anterior mediastinum. In 68 per cent. of cases the anterior glands were primarily affected, though in 21 of these the disease had spread to involve the posterior and bronchial glands as well. Of the 44 cases of sarcoma 32 were lymphosarcoma. In 93.3 per cent. of cases the disease spread before death to involve the lung tissue. The right lung was affected in 71.6 per cent. of cases. The commonest combination was found to be an involvement of liver, pancreas and suprarenals. Most of the cases ran a more or less chronic course, and all were fatal. The minimum duration was nine weeks. The maximum duration was eighty-eight weeks. The tendency seemed to be that the younger the patient the more rapid was the course of the illness. The causes of death were: Exhaustion, 43 cases; asphyxia, 11 cases; hemoptysis, 3 cases; cardiac failure, 2 cases; cerebral tumor, 1 case.

The study of these 60 cases of new growth of the mediastinum leads Ross to conclude that malignant disease of the mediastinum is not so rare as is generally supposed, and it seems to be increasing in frequency. The symptomatology is variable. If pyrexia be present, it is due to some complication supervening on, or caused by, the original condition. Microscopic examination of the sputum is rarely of any diagnostic value, but the persistent absence of tubercle bacilli in a case suggesting pulmonary tuberculosis is very significant. Hemoptysis, though moderately common, is rarely severe. A pleural effusion is often present and it is often hemorrhagic, but a hemorrhagic effusion is not pathognomonic of malignant disease. Microscopic examination of the pleural fluid is rarely of any diagnostic significance. A large proportion of lymphocytes is quite as commonly found in a malignant as in a tuberculous effusion. Roentgenography is of great value in the diagnosis.

Lancet, London

December 19, II, No. 4764, pp. 1397-1450

7 *Modern Aspects of Certain Problems in Pathology of Mental Disorders. E. Goodall.
8 *Method of Treating Sac in Radical Cure of Femoral Hernia. J. P. Buckley.
9 *Treatment for Prolapsus Ani in Young Children. W. Gemmill.
10 Case of Delayed Chloroform Poisoning. H. P. Fairlie.
11 Case of Acromegaly Two Hundred Years Ago. L. Mark.
12 Trigger Finger, Its Cause and Mechanism. A. B. Judson.
13 Treatment of Wounds in War. A. A. Bowlby.
14 Our Army's Teeth. F. Newland-Pedley.

7. **Modern Aspects of Certain Problems in Pathology of Mental Disorders.**—In the absence of anything approaching adequate information, it seemed desirable to experiment with the blood of certain of the insane with a view to determining whether specific precipitins could be produced by inoculation of rabbits and for this purpose Schölberg and Goodall selected cases of dementia paralytica and dementia praecox; the former presenting well-marked symptoms of the second stage, the latter in an active stage of the disease. Blood was received from an arm vein through a sterile cannula into a sterile bottle, and the serum allowed to separate. Rabbits were inoculated intravenously, in accordance with the practice recommended by Uhlenhuth and Weidanz, at intervals of seven days with from 2.5 to 3.0 c.c. of the serum. Seven days after the third injection and before each subsequent injection, about 3.0 c.c. of blood was removed from the dorsal vein of the ear, centrifugalized, and 0.1 c.c. of the serum added to 1 c.c. of a dilution of 1 in 1,000 (salt solution) of the freshly obtained serum of the patient whose blood was to be tested. The antiserum was thus tested on the seventh day after each injection—that is, about the time at which, according to Uhlenhuth and Beumer, the production of precipitin in the rabbit's blood is most active.

Schölberg and Goodall found that when a precipitate was about to be formed the clear fluid of the tube concerned showed a characteristic cloudiness within a quarter of an hour, but flocculi took longer to appear; and it was from one to three and a half hours before the actual precipitate was apparent. The animal furnishing the precipitin was immediately killed under chloroform, the blood allowed to collect and clot in a sterile bottle, the serum filtered through a porcelain filter and received direct into ampoules, which were sealed as filled. Thirteen patients were examined and ninety-four rabbits were used. Precipitin was formed in 10.6 per cent. or in ten out of the ninety-four instances, illustrating the difficulty met with in the attempt to obtain information about precipitins. A precipitin was mostly obtained after injection of from 8 to 12.5 c.c. of serum, and when the latter amount is exceeded the prospect of obtaining precipitin is small; in fact, it is not worth while to continue with the injections when no result is obtained with, say, 15 c.c. The loss of weight shown in individual instances was very considerable in the majority of the rabbits, and of 89 in which the weight was taken weekly during the inoculations, 73, or 82 per cent., lost weight.

The points brought out are these: Seven antiserums, from rabbits inoculated with serum from cases of dementia paralytica and dementia praecox were employed against the serum of 173 patients, in dilutions varying from 1 to 100 and 1 to 20,000. These patients illustrated many kinds of insanity—two exceptional cases were those of sane persons with florid syphilis, for trial with antiserum from a general paralytic. Each antiserum was put against the serum of the patient by the injection of which it resulted, also against that of patients with the same disease, and against serum of patients with other kinds of insanity.

The results were estimated by naked-eye observation. From these it is to be gathered that a given antiserum produces the same amount of precipitate, whether it be put against the actual serum by which it was produced, the serum of patients suffering from the same disease, or the serum of patients suffering from other kinds of insanity. And this obtains for the various dilutions employed. In ten cases antiserum from a general paralytic was put against cerebrospinal fluid from general paralytics, an imbecile, and a case of delusional insanity, in a dilution of 1 to 500. Either no precipitate or a mere trace resulted and without distinction as regards amount. With the pure cerebrospinal fluid, abundant precipitate resulted, but again without distinction. Evidently the reacting body is much less in amount in this fluid than in the serum.

8. **Radical Cure of Femoral Hernia.**—During the last three years Buckley has performed the following operation some thirty times, no patient having returned with a recurrence. The skin incision is made commencing about 1½ inches

above the inner end of Poupart's ligament and vertically above the crural canal, extending down to 1½ inches below the external opening of the canal and having a slight convexity outward. Buckley prefers the external convexity in that it gives more room and removes the suture line further from the genital organs than does the ordinary straight vertical incision. The hernial sac, covered by its layer of properitoneal fat, is exposed and thoroughly separated as far as the opening of the crural canal into the thigh. The upper end of the wound is held open by retractors, the surface of the aponeurosis of the external oblique muscle cleaned and an incision made in it parallel to its fibers about 2 inches long and ½ inch above the external ring of the inguinal canal. The conjoined tendon is thereby exposed. The properitoneal fat, covering the true sac of the hernia, is now removed as completely as possible.

An opening is made with scissors at the apex of the sac, the contents, if any, are reduced, and any adhesions separated. The edges of the sac are held apart by Spencer Wells forceps, and the forefinger is passed through the crural canal into the abdominal cavity. The finger when passed is flexed forward so that the tip presses against the conjoined tendon. A pair of closed curved "catch" forceps is passed along the flexor surface of the inserted finger until the tip of the forceps is against the conjoined tendon; the tip of the forceps is pushed through the conjoined tendon, and appears at the upper end of the skin incision. The opposed surfaces of the blades of the forceps are grooved, the better to hold a closed pair of Kocher's hernia forceps, the tips of whose blades are inserted between the blades of the curved forceps. The latter are withdrawn with the Kocher forceps in their grip, so that the blades of the latter forceps appear at the opening at the apex of the hernial sac.

The edges of the sac are caught between the blades of the Kocher forceps and the sac is pulled inside out, appearing through the conjoined tendon. This maneuver is carried out gently but firmly, and the peritoneal lining of the crural canal is stripped completely away from the canal and invaginated together with the sac of the hernia. The sac is transfixed with a full-curved needle, threaded with catgut, close to the conjoined tendon, ligatured and then cut away. One end of the catgut is again threaded and the needle passed through the conjoined tendon on one side of the stump, through the stump itself and through the tendon on the other side of the stump, and the two ends tied, the stump thereby being fixed to the conjoined tendon and retraction being prevented. The slit in the aponeurosis of the external oblique muscle is closed with a continuous catgut suture; the pectineus muscle and fascia are brought into apposition with Poupart's ligament by a stout catgut suture; the skin incision is closed with silkworm gut, and a gauze dressing and firm spica bandage applied.

9. **Treatment for Prolapsus Ani in Young Children.**—The principle in the treatment advocated by Gemmill is to bring about a condition in which the abdominal capacity responds passively to the decrease in contents brought about by the evacuating contractions of the large bowel, and is not actively decreased by the strength of the accessory forces. This is attained by preventing the flexion of the thighs and spine. A straight wooden splint, well padded and covered with mackintosh, is applied to the back of the child of a length to reach from the neck to the heels, and the child is fixed to the splint by two bandages, one round the thorax and the other round the lower limbs. Splint with a hiatus in the region of the anus bridged by a circle of iron, allows defecation without soiling of the splint and also easy access for such local treatment as cold douching. The result obtained is that the extended position of the child prevents the action of the accessory forces in great part, for the abdominal muscles are placed at a disadvantage for contracting. This position also prevents the decrease in abdominal capacity from flexion. Hence evacuation takes place almost entirely from the muscular action of the great bowel. The removal also of the natural support which the soft parts give to the anal canal and sphincters is prevented, and the splint itself gives additional local support by pressing on the soft parts of the buttocks, from which it follows that the hiatus must not be too large, a condition in which this local pressure would be lost. The relief which this method gives is immediate, the bowel remaining in the abdomen after reduction from the beginning and no prolapse occurring even during defecation, for which the splint must not be removed.

Bulletin de l'Académie de Médecine, Paris

November 24, LXXII, No. 37, pp. 269-292

15 *Treatment of Wounds in War. Chavasse.
16 Treatment of Wounds of the Eyes. (Blessures de l'œil.) A. Terson.
17 Pointed Tip of Bullet Turned Backward in Cartridge. (Une explication possible de certains blessures graves par balles de fusil.) T. Tuffier.

December 1, No. 38, pp. 293-316

18 *Phenol in Treatment of Tetanus. P. Sainton.

15. **Treatment of Wounds in War.**—This is a little manual of instructions for the physicians with the French army, prepared by Chavasse, chief of the medical department of the active army. It says that every wound and its vicinity should be painted with a single coat of 1 per cent. tincture of iodin. Soiled dressings must not be thrown on the floor, but into some receptacle. The fact that a dressing smells badly is in itself no reason for changing it. Nothing promotes the healing of a wound so much as to leave it in peace. When the dressings smell offensively they can be deodorized with a tablespoonful of Javelle water (solution of chlorinated potassa) to a liter of water, or a tablespoonful of Labarraque's solution (solution of chlorinated soda) to a liter of water. Trains carrying the wounded should have an ample supply of these deodorants. Another point emphasized is that bandages should not be made up in rooms where there are sick or wounded. Wounds in war should never be closed up, but, when the defect is very large, strips of plaster, clips or other measures partially to close the gap will aid repair later. No constricting band should be left in place for longer than one hour or two at most. Direct compression to arrest hemorrhage is safer than letting a tourniquet stay on too long. Jagged wounds should be cautiously cleared of foreign substances and sterilized with hydrogen dioxid, finishing with tincture of iodin applied throughout the depths to every point. Pure oxygen played in the depths of the wound is an important aid in warding off gas gangrene.

18. **Phenol in Tetanus.**—Sainton says that six patients recovered of his twenty-two with tetanus, and in two the tetanus was of the severest type. His treatment consisted of a subcutaneous injection twice a day of 40 or 50 c.c. of 2 per cent. solution of phenol—the Baccelli method. The patients were isolated in semidarkness, and twice a day each was given an enema containing 6 or 8 gm. of chloral, one or two yolks of eggs and 250 gm. of milk. The phenol injections were kept up for a month or more in two cases, one patient thus receiving a total of 48 and another 88 gm. of the phenol (*acide phénique*). The secret of success, he reiterates, is to commence treatment at the first signs of the slightest difficulty in swallowing or of contracture in the muscles around the wound.

Presse Médicale, Paris

November 12, XXII, No. 75, pp. 673-680

19 Metal Brace for Extension in Fracture of the Humerus. (L'appareil à extension du Pr. Pierre Delbet.) A. Mossé and Lemare.
20 Gas Gangrene and Injury from Freezing. (Gangrènes gazeuses et engelures.) G. P. Trifonoff.

November 26, No. 77, pp. 697-704

21 Vaccination against Typhoid in Belfort District. H. Bousquet.

Revue Médicale de la Suisse Romande, Geneva

November, XXXIV, No. 11, pp. 617-696

22 *Abdominal Fixation of Retroflexed Uterus and Subsequent Pregnancy; Thirty-Eight Cases. (Hystéropexie abdominale directe et puerpéralité.) M. Muret.
23 *The Swiss Red Cross Unit in Balkan War. (L'activité de l'ambulance Vaud-Genève pendant la guerre gréco-turque.) A. Reverdin.
24 *Prevalence of Cancer in Switzerland in Relation to Soil and Water. J. Barth.

22. **Correction of Retroflexion by Abdominal Fixation of the Uterus.**—Muret analyzes with minute detail 38 cases of this kind in which pregnancy occurred later. The women were between 21 and 35 years old, and the pregnancy developed normally and the head presented in every case. Delivery was spontaneous in 23 of the 31 cases that proceeded to term; forceps were required in 8 and there was premature delivery in 3 cases and 7 of the women aborted. There was never any disturbance from traction on the uterus or displacement of the cervix or abnormal presentation or dystocia requiring version or cesarean section, and the puerperium was normal in all. He fastens the uterus to the abdominal wall very low down on both the uterus and the abdominal wall, and makes the junction superficial and narrow. This allows the uterus to expand without interference with its enlargement or its evacuation later. The proportion of premature deliveries and abortions was no higher than the usual average, he adds.

23. **Work in Field Hospital in Balkan Wars.**—Reverdin's account of the work of the flying hospital sent by Switzerland to the aid of Greece in 1913 is profusely illustrated. The mortality among the wounded rose and fell with the duration and discomfort of the transportation. He says that bullets that rebound from a hard surface are liable to have the shell cracked and thus they mushroom in the tissues. Another factor in explosive action of this kind is the heat generated by the impact against the hard substance; the bullet as it rebounds has become so hot that part of the lead kernel softens. The great difference in favor of abdominal wounds in war, he remarks, "is because the soldiers are not the sedentary, meat-eating, constipated creatures of peace." One of the drawbacks of military surgery is that the wounded pass through two or three different surgeons' hands in the field and clearing and base hospitals, and the plan of treatment thus gets deflected according to the personal bias of each surgeon.

24. **Cancer in Relation to Soil and Water.**—Barth's geologic and meteorologic data and the statistics in regard to the prevalence of cancer show that in the regions with much silica in the soil cancer is comparatively rare. It is twice as frequent in the regions with chalky soil, and especially along the rivers flowing through cretaceous regions. He urges others to investigate the data along these lines in other countries, and adds that Zeller has reported encouraging results from sodium silicate in treatment. Phenomena of mineralization or demineralization from the action of the lime in the cretaceous soil may yet prove to be a factor in the predisposition to cancer.

Archiv für klinische Chirurgie, Berlin

CVI, No. 1, pp. 1-250. Last indexed Dec. 5, p. 2077

25 *Thyroid and Parathyroid Grafts. (Zur Frage der dauernden Einheilung verpflanzter Schilddrüsen und Nebenschilddrüsen, zugleich ein Beitrag zur postoperativen Tetania parathyreopriva.) A. von Eiselsberg.
26 *Thyroid Grafting. (Schilddrüsentransplantation.) E. Payr.
27 Surgery of Intrathoracal Cancer of the Esophagus. E. Unger.
28 Surgery of the Sinus Cavernosus. E. Streissler.
29 Radium and Roentgen Treatment of Cancer. A. von Eiselsberg.
30 Injury from Indelible Pencil; Three Cases. (Verletzungen mit Tintenstiften.) S. Erdheim.
31 *Absorbable Tampons to Arrest Sheet Hemorrhage. (Neue Methode zur Stillung parenchymatöser Blutungen.) E. Jeger and J. Wohlgemuth.
32 The Electromagnet in Prophylaxis of Abdominal Adhesions. (Ueber den Magen- Darm- Elektromagneten und seine Anwendung. Prinzipien der Adhäsionsprophylaxie.) E. Payr.
33 *Experimental and Clinical Study of the Thymus Gland. O. Nordmann.
34 Influence of Splenectomy on Blood-Picture. (Experimentelle Untersuchungen über den Einfluss der Milzexstirpation auf das periphere Blutbild.) E. W. Kreuter.
35 Overlapping of the Abdominal Walls in Hernia Operations. W. v. Wrzesniowski.
36 Non-Malignant Epitheliomas. (Zur Lehre von den gutartigen Hautepitheliomen.) L. Wrede.
37 Phlegmonous Intestinal Processes. G. von Saar.
38 Treatment of Stiff Joints. (Weitere Erfahrungen über die Mobilisierung ankylosierter Gelenke.) E. Payr.

25. **Thyroid and Parathyroid Grafts.**—Von Eiselsberg's experience has been disappointing, like those of others in this line. The implanted gland tissue sooner or later becomes absorbed. But there was unmistakable benefit at first in some cases, and this might tide the patient along until the natural gland had recuperated enough to resume its functioning. The benefit at first may be marked, but then it soon dies out, contrary to what occurs with thyroid treatment; here the benefit develops very slowly and gradually. He describes in detail his 2 cases of repeated thyroid grafting in cretin children, and also 4 cases of repeated grafting of parathyroids in adults for postoperative tetany. Two patients were cured and transient improvement was evident in the others. In connection with the above grafting experiments, he reviews the 22 cases of postoperative tetany that have developed in the last twelve years among his 1,300 operations on the thyroid. In 14 cases the tetany was mild and transient; in 4 it persisted for several years, nine months or six weeks, and in a fifth case it was extremely severe, but subsided after parathyroid grafting. In 3 other cases the patients succumbed to pneumonia not long after the operation, and the severe tetany had persisted during the interval. In 2 cases of long persisting tetany, cataract developed during its course. In some of the cases the postoperative tetany can be explained only on the assumption that the patients did not have the normal number of parathyroids at the time of the operation. Parathyroid grafting is not always feasible, as the donors can seldom spare enough parathyroid tissue for the purpose. Consequently, Eiselsberg advises waiting until parathyroids can be obtained from a child dying at birth or from a fatal accident. His one attempt to use a parathyroid from a monkey proved a failure.

26. **Thyroid Grafts.**—Payr has done seven transplanting operations on the thyroid in the last eight years. In five cases the interval since has been over three years. He thinks that the improvement in the myxedema which followed the grafting is to be ascribed to the implant, and justifies further work in this line even if the implant does finally become absorbed. Certain important conclusions can be drawn from his experience, namely, the necessity for distinguishing between congenital thyroid insufficiency and acquired insufficiency. Children born without a thyroid do not survive puberty, while cretins with a goiter may live to an advanced age. Signs of defective development of all or part of the brain render the outlook for treatment less promising. Zingerle and Scholz found decided pathologic changes in the brains of cretins, asymmetry of the hemispheres, unusually small size of certain lobes, abnormal convolutions or entire absence of convolutions in the frontal lobe, and abnormally large ventricles. These characteristic findings readily explain the inefficacy of any treatment.

Payr is convinced that the thyroid plays an important part in the development of the central nervous system; the earlier the thyroid loses its physiologic balance, the more serious the resulting influence on the development of the nervous system. The clinical forms of imbecility must be studied more closely so as to differentiate those in which thyroid functioning is at fault from the cases of mental impairment from encephalitis, hydrocephalus, syphilis, rachitis, steeple skull, etc. With acquired thyroid insufficiency we can hope for some relics of normal thyroid tissue. Thyroid treatment must be given a thorough trial before any grafting operation of the kind. If there is not the slightest benefit after a thorough parenteral course of thyroid treatment, the thyroid origin of the trouble is open to doubt.

In case of doubt he advises a small exploratory incision to expose the thyroid and show its actual condition. This is a very simple and harmless procedure even for small children, and the incision can be utilized to implant thyroid tissue at the same time. It might be advisable to make an incision at the root of the tongue in case there is suspicion of an aberrant thyroid here. Blood relations seem to be better for donors, and as so much of the graft is promptly absorbed it is wise to make it quite large. When the implant is in a serous cavity or organ, fitting tight and snug against the tissues, the conditions for nourishment may be better than when the reliance is on the sutured vessels. Thrombosis dooms the whole implant in the latter case. The marrow of the tibia, the spleen and the subcutaneous cellular tissue are the best sites for the grafting operations. The latter permits repetition of the grafting with less damage than at other points.

31. **Absorbable Tampons to Arrest Parenchymatous Hemorrhage.**—Jeger and Wohlgemuth make a fibrous, lint-like mass out of a delicate membrane taken from the intestines of sheep or cattle. It is frozen in a solid mass and then cut into very thin slices which break up into extremely fine threads. It is sterilized by keeping for three days in a 5 per cent. solution of phenol and then rinsed well in alcohol. The soft fibrous mass is rinsed in salt solution before using and is applied still dripping to the bleeding surface. The capillary attraction of the fibers is equal to that of strips of gauze, and the broad stream of blood is thus changed into innumerable minute streams, thus multiplying the surface area—a powerful factor in the coagulation of blood. The fibrous mass is also pressed down on the bleeding surface like any tampon, but it is gradually absorbed. Not a trace of it could be seen after four or six weeks in the experiments on dogs' livers, spleens, etc., reported.

33. **The Thymus.**—Nordmann was unable to detect any influence on the growth or development in any way of dogs thymectomized soon after birth. His evidence is all against the assumption that the thymus is a vitally necessary organ. On the other hand, when the thymus is unduly enlarged and probably hyperfunctioning it is liable to set up or aggravate exophthalmic goiter. He operated on the thyroid for exophthalmic goiter in eighteen patients and three died during the operation, and in all of these—a man of 48 and two women of 28 and 23—the thymus was found unusually large for their age. The others were all cured by the operation on the thyroid. In some cases everything seems to incriminate the thymus as the cause of exophthalmic goiter. In any event the thymus should be investigated in every case, and if the thyroid seems practically normal while the symptoms are severe, the thymus is probably at fault. It should be resected if unduly large for the age. If not enlarged, the intervention had better be restricted to simple ligation of the vessels at the poles of the thyroid. If no improvement follows this in the course of months, resection of the thyroid should be advocated. When the exophthalmic goiter is of purely thymic origin, the patients seem to be unable to stand the simplest operative procedures, not even ligation of the vessels of the thyroid under local or general anesthesia. The operation in itself and the resulting shock seem to be the cause of death with persisting thymus, and yet one of the patients in his group with fatal outcome had passed through an operation for ruptured tubal pregnancy without harm two years before. It is possible that the operation on the thyroid causes the production of certain fatally poisonous substances. It is certainly noteworthy that some of these patients had had operations done on the thymus without harm; the thyroid had been left unmolested, however.

Berliner klinische Wochenschrift

November 30, LI, No. 48, pp. 1853-1880

39 *War Neurology. (Zur Kriegsneurologie.) H. Oppenheim.
40 Vaccination Against Typhoid. (Typhusschutzimpfung.) H. Kossel.
41 *Freezing Injuries. (Erfrierungen im Kriege und ihre Behandlung.) E. Melchior.
42 *Transfusion of Blood. (Ueber grosse Bluttransfusionen.) A. Plehn. Concluded in No. 49.

December 7, No. 49, pp. 1881-1904

43 Treatment of Gunshot Wounds. Stutzin.
44 Tetanus. G. Wolfsohn.
45 Anthrax as War *Pestilence*. (Der Milzbrand als Kriegsseuche.) P. Richter.
46 Treatment of Malaria in Fowls. (Chemotherapeutische Versuche bei Vogelmalaria.) L. H. Marks.
47 Direct Examination of Duodenal Contents (also Bile) as Aid in Diagnosis of Gall-Bladder and Pancreatic Affections. M. Einhorn (N. Y.).
48 *Nosebleed in Children. (Zur Kenntniss und Bedeutung des Nasenblutens im späteren Kindesalter.) A. Petry.

39. **War Neurology.**—Oppenheim is in charge of what he calls the Nerven-Lazarett at Berlin with 100 beds, exclusively for soldiers with nervous affections. Neuroses and psychoses are not so frequent among the troops as might be anticipated, and as a rule they develop only in the predisposed, either by previous nervous or mental affections, trauma affecting the head, or abuse of alcohol. The vasomotor sphere seems to be peculiarly affected in these war neuroses. The syndrome of exophthalmic goiter developed in one officer, but disappeared again after a six weeks' rest cure. Oppenheim has been impressed with the remarkable variety of the symptoms that may follow a gunshot wound of the head. The destruction caused by the bullet on its way is responsible for them, not the bullet itself, he thinks.

When a bullet hits the spine and swerves aside, the impact may cause hemorrhage in, softening or acute necrosis of the spinal cord, even with intact vertebrae. What to do in these cases is a problem. He operated in five, but learned nothing definite except possibly that signs of a total lesion of the cord do not contra-indicate operative measures unless of several months' standing.

The sensory nervous system participates to a remarkable extent in gunshot wounds of the peripheral nerves; sometimes the sensory fibers alone seem to be injured. The agonizing pains are relieved only transiently by morphin in large doses. These pains seem to occur only when the nerve is partially injured and not when the injury blocks the entire nerve, as a rule. He has had several cases in which the bullet had injured the sensory fibers and no others in the sciatic nerve. There was anesthesia of the sole, while the motor functioning and electric excitability were normal. These experiences confirm Stoffel's views on treatment of spastic paralysis.

The psychic and remote vasomotor and secretory phenomena in some cases suggest that the impact of the projectile caused a wave of molecular changes in the various parts of the central nervous system. The terrific neuritic pains were sometimes relieved by a hot bath or superheated air or a plaster dressing. The pains usually become attenuated in time, but this may require months.

41. **Freezing Injuries.**—Actual freezing requires rubbing with snow or cold cloths and then wrapping in cotton to allow the limbs to warm up in bed without artificial heat. The same is advisable also when there has not been actual freezing. To emphasize the danger from artificial heat, even when the parts are not actually frozen, Melchior reports the case of a robust young man who had been out with snow shoes in extreme cold and danced in the evening. On the homeward trip he put his cold feet on the stove in the car, and rapid gangrene followed with sloughing of all the toes. When gangrene threatens, the stasis may be arrested by slitting the end of the finger or toe down to the bone, as Noesske has recommended (described in The Journal, 1909, liii, 1605). This measure rendered good service during the recent Balkan wars. When gangrene has developed, the drying up of the tissue can be hastened by peeling off the epidermis. The benefit from this is especially apparent when the epidermis has been partly removed and patches of it left. The mummification and healing of the bare areas proceed much more rapidly than elsewhere, as the epidermis acts like an impermeable membrane damming up the secretions, the sweat glands, etc., having lost their functional capacity in the gangrenous region.

42. **Transfusion of Blood.**—Plehn says that during the seventeenth century attempts were made to tranquilize persons with rabies and insane persons by transfusion of the blood of the gentle lamb. Denis and Tardy used a silver catheter for the purpose, but owing to the disapproval of the Paris medical faculty the procedure was abandoned until revived about 1820. Plehn took it up about six years ago and has applied it in thirty cases, mostly of pernicious anemia. The technic for keeping the blood at body heat until it enters the vein is still far from perfect. He found that it lost several degrees between the donor and the recipient in his cases. The primary symptoms as the blood begins to flow into the vein gradually become attenuated and there seldom are secondary symptoms unless 600 c.c. or more is transfused. With 200 or 250 c.c. he has had no secondary reaction. The symptoms are slight fever, head-

ache and prostration and possibly a chill. The donor's blood must show at least 95 or 80 per cent. hemoglobin. Plehn's results have been incomparably better since he has made a point of selecting persons with polycythemia for the donors.

Four of his patients were practically moribund and soon succumbed notwithstanding transient benefit from the transfusion. One of these was a woman almost exsanguinated from a bleeding myoma. When the blood was allowed to pour into the vein it seemed to meet with some hindrance; the transfusion was then changed to the other arm but the same hindrance to the inflow was encountered. This rendered it evident that the trouble was in the right heart itself, the degenerated muscle not being strong enough to manage with the extra supply of blood. Constriction was then applied to the vein below to retard the inflow, and with this modification the whole amount was infused, 550 c.c. of blood and 500 c.c. isotonic salt solution, the procedure taking nearly an hour. Toward the last there were nausea and chilliness and the temperature ran up to 40 C. but these soon subsided and the woman's condition was improved so much by the transfusion that three days later an attempt to remove the myoma could be made.

In a fifth case a robust man of 49 had had stomach disturbance for six months and then pernicious anemia developed in the course of a few weeks. When the hemoglobin had dropped from 25 to 23 in a week, 400 c.c. of blood from a young woman was infused plus 500 c.c. salt solution. Symptoms of intoxication followed, with death the nineteenth hour. The blood of the donor induced agglutination and hemolysis with blood from other patients, and the dead patient's urine contained hemoglobin. The extra mechanical task imposed on the heart renders extreme caution necessary during the infusion. Attacks of coughing are evidently due to the overfilling of the vessels in the lungs. They cease as the heart adapts itself to its task. The infused fluid must be kept at body temperature or there is liable to be trouble, but aside from this, if there is no tendency to hemolysis—and this can be excluded by preliminary tests—the secondary disturbances need not be feared. His experience with transfusion in cases of secondary anemia has been extremely gratifying, as also preliminary to operations in which considerable loss of blood is feared, with placenta praevia, extra-uterine pregnancy, etc. As there does not seem to be any tendency to anaphylaxis with transfusion of blood, it can be repeated as often as needed. He has found it the best means to arrest subacute hemorrhages, and theorizes to explain the mechanism of its action in this and other respects, emphasizing in conclusion that the transfusion requires trained assistance.

48. **Nosebleed in Children.**—Petry relates the case of a child of 9 who for a year had suffered from recurring epistaxis and was extremely anemic. She had been treated with iron for the anemia but the nosebleed kept returning. Finally two minute ulcers were discovered on the septum, the source of the bleeding, and as soon as these had been cauterized with trichloracetic acid there was no further hemorrhage and the anemia rapidly gave place to normal conditions. During sepsis and acute infectious diseases, the diagnosis of "septic nosebleed" should never be made without inspection of the nose, as an overlooked bleeding ulceration may do great harm as he shows by a number of examples. In one case a child of 7 had pneumonia, fever, headache and vomiting, and by the end of the week he began to vomit large amounts of dark clotted blood and was much agitated. No one, not even the trained nurse, suspected that the blood came from the nose until a small bleeding ulcer was found on the septum and promptly healed under an epinephrin salve. In two other cases pneumonia set in with profuse epistaxis and necropsy in one case showed numerous emboli of diplostaphylococci in the capillaries of the nasal mucosa. The mucosa in the non-fatal case presented the same aspect. In a third case the profuse epistaxis came on likewise late in the course of pneumonia, and the nosebleed was followed by extravasation of blood into the skin at various points. The child had tossed around so much that the ecchymoses at various points were evidently of a traumatic nature, but the hemorrhages were none of them profuse enough to have proved fatal if it had not been for the continuous drain from the bleeding ulcer on both sides of the septum. It is more than probable, Petry adds, that the child might have been saved if the bleeding ulcers in the nose had been discovered earlier. The hemorrhages were ascribed to the sepsis in general and no search was made for a possible local source.

Deutsche medizinische Wochenschrift, Berlin

November 26, XL, No. 48, pp. 2001-2024

49 *Acute Injury of the Esophagus. (Behandlung akut bedrohlicher Zustande bei Erkrankungen der Speiseröhre.) J. Grober.
50 Necessity for Seeking Out Source of Venereal Infections. (Zur Prophylaxe der Geschlechtskrankheiten im Felde.) A. Buschke.
51 Sterile Catgut. W. Lange and Grenacher.
52 Gas Phlegmons. A. Tietze and Korbsch.
53 *Treatment of Furuncles. A. Schüle.

49. **Acute Injuries of the Esophagus.**—Grober discusses the treatment of caustic corrosion of the esophagus, foreign bodies, etc., and wounds of the esophagus in war. He warns against any attempt to remove foreign bodies by mechanical means except under direct visual inspection with endoscopy. Until this can be done the patient's pain and distress can be alleviated by sipping a solution of cocain, a drop or so at a time, keeping well under the maximal dose, or twenty drops of a 1 per cent. solution of morphine in a tablespoonful of water. The region should be examined with the endoscope also if the slightest disturbance is noted a few days after a foreign body in the esophagus has been expelled by vomiting or has been carried down and off through the stomach and intestines. Gunshot and bayonet wounds of the esophagus display a marked tendency to spontaneous healing. In one such case the man died a week later from a wound in the head received at the same time a bullet had severed about a third of the circumference of the esophagus; necropsy showed that the opening had healed without suppuration. The man had been given nothing by the mouth except ice water. With cancer in the esophagus, the physician's task is to inform the family but keep the patient from suspecting the nature of his trouble. Here more than anywhere else perhaps, he remarks, is the difference more evident between the true physician and the "for revenue only" type. In management of a diverticulum, relief can often be obtained from an emetic; he has one patient who for years has taken an emetic every morning and thus regularly clears out his diverticulum.

53. **Treatment of Furuncles.**—Schüle declares that every furuncle can be aborted in the first forty-eight hours if the center is burnt out under local anesthesia with 2 per cent. novocain injected first to make a blister and then injected perpendicularly into the center of the boil. The actual cautery can then be used to burn out the center or merely a knitting needle can be used, heated red hot in an alcohol flame. The knitting needle can be stuck through a cork for a handle. To prevent further furuncles developing the skin should be cleansed with soap, rubbed with alcohol and any suspicious looking points painted with tincture of iodin, burning out the center if a furuncle does develop. Even with a fully developed furuncle he advocates burning out the center plug in this way rather than to incise. The hyperemia thus induced aids in warding off new infection.

Deutsche Zeitschrift für Chirurgie, Leipzig

October, CXXXI, Nos. 5-6, pp. 397-598

54 *Plastic Operations on the Esophagus. A. Jianu.
55 *Diabetes and Surgery. H. Fischer.
56 Hemorrhoidal Nodules in the Newly Born. H. Harttung.
57 *Cystinuria and Cystin Concrements. L. Frankenthal.
58 Paranephritic Abscess; Thirty-Five Cases. W. V. Simon.
59 *Serodiagnosis of Cancer. (Die Abderhaldensche Reaktion beim Carcinom.) S. Trubina.
60 Chronic Duodenal Ulcer; Clinical Study of Operative Treatment. F. Kaspar.

54. **Plastic Operation on the Esophagus.**—Jianu has applied in two further cases his method of making a new esophagus out of a strip of tissue cut from the greater curvature of the stomach and brought up under the skin of the chest to form a tube opening into the stomach and serving as the gullet. These two cases show that the operation can be done success-

fully even on much debilitated children, and that the technic is comparatively simple and easy even when the stomach is adherent to the abdominal wall. He answers the various objections that have been made to the method.

55. **Diabetes and Surgery.**—Fischer reviews his experience with various operative measures for surgical affections in 86 diabetic patients. The total mortality was 48.8 per cent., but it was 54.5 per cent. in the 57 requiring operative treatment; and 72.7 per cent. in the 11 amputations for diabetic gangrene. In 8 of his 23 cases of diabetic carbuncle the diabetes was discovered first when the carbuncle developed.

57. **Cystinuria.**—In Frankenthal's two cases the output of cystin was reduced when meat was dropped from the diet but then there was almost constant pain. When meat was allowed, plus sodium bicarbonate, there was little cystin but still great pain, regardless of whether the patient was in bed or up and about. On a meat diet the amount of cystin crystals increased but the pain was less, the patients increased in weight and felt better. The first patient was a woman of 24 and a cystin stone was removed from her kidney pelvis. The other was a boy of 3 and the concrement causing the trouble was in the bladder. It cast a shadow and measured 3x2.3x1.6 cm.

59. **Serodiagnosis of Cancer.**—Trubina obtained a positive response to the Abderhalden test in 95 per cent. of 73 cancer cases, but 50 gave a positive response also with placenta tissue, and 13 of 19 pregnant women gave a positive response with cancer tissue.

Medizinische Klinik, Berlin

November 29, X, No. 48, pp. 1727-1754

61 *Syphilitic Abdominal Disease. (Die syphilitischen Erkrankungen der Bauch- und der Circulationsorgane und ihr Einfluss auf die Felddienstfahigkeit.) G. Hoppe-Seyler.
62 Localization of Foreign Bodies. (Behelfe zur Fremdkorperbestimmung.) Drüner.
63 Radiotherapy of Skin Diseases. (Die strahlenden Energien in der Dermaltherapie.) S. Ehrmann.
64 *Trauma and Pulmonary Tuberculosis. A. Mayer.

61. **Abdominal Syphilitic Affections.**—Hoppe-Seyler expatiates on the variety of clinical pictures which may be presented when syphilis attacks the liver, and the severe impairment of the general health which results. But appropriate treatment in time corrects conditions completely, even serious changes in the liver tissue retrogressing so that full functional capacity is restored. The syphilitic nature of the liver trouble is liable to be overlooked and as long as this is the case suitable treatment is not applied. In some cases early in the second stage of syphilis symptoms develop of what seems to be ordinary catarrhal jaundice; they may subside and return or keep up for a long time. The jaundice is caused sometimes by swelling of the portal lymph glands, thus compressing the outlet for the bile. In other cases the catarrhal affection is restricted to the bile ducts. The liver with syphilitic jaundice is usually enlarged, smooth, often tender, and the spleen may be enlarged likewise without ascites, and there may be fever of a variable type. Symptoms of cirrhosis of the liver may appear and if the tissues around become inflamed there may be violent pains. Sometimes the pain with syphilitic disease in the liver simulates in every respect actual gall-stone colic; this has led to useless operations in numerous instances on record. The cirrhosis sometimes develops without jaundice; the liver is large and smooth but not tender and there may be no congestion in the portal domain. The spleen may be enlarged from the same characteristic tendency to proliferation of connective tissue and there may be anemia, the clinical picture thus simulating splenic anemia or pseudoleukemia. In some cases the liver is found small and hard and knobby, the spleen enlarged, with ascites and anemia—the whole thus deceptively resembling Banti's disease. In other cases the liver is hard and shriveled, with a knobby surface as in typical Laennec's cirrhosis; this form is generally found in connection with abuse of alcohol. Deep grooves may cut the liver into queer shapes, and there may be inflammation around with adhesion to the parietal peritoneum. When this is the case the assumption of cancer seems justified, except that the spleen is usually enlarged also and that the trouble does not progress so rapidly as malignant disease. Particularly in the young, syphilis is liable to entail gummatous growths in the liver; it grows large and tough, protruding at unusual points, with much pain and fever.

Still another clinical picture is that from inflammation of the walls of the portal vein and vicinity, with thrombosis and shriveling, followed later by stasis in the portal domain, ascites, and hemorrhoidal hemorrhages, while the liver keeps small and soft.

When the vicissitudes of a campaign are superposed on these clinical pictures, the outlook is serious unless specific treatment is applied at once. A vigorous course of iodid and mercury can do no harm in any event, and the result may be a complete cure. He warns to be very cautious with salvarsan in cases with fever and jaundice, as acute atrophy threatens; under other conditions an intravenous dose of 0.2 gm. salvarsan once a week is usually borne without harm and may transform the clinical picture. The diet must be restricted as usual with liver affections.

The pancreas and kidneys may likewise be affected with the syphilitic proliferation of connective tissue, and glycosuria up to severe diabetes mellitus may develop in consequence. Cases are comparatively frequent of mild syphilitic interstitial pancreatitis with cirrhosis of the liver, or syphilitic interstitial nephritis leading to secondary contracted kidney.

Syphilitic affections of the aorta and other vessels seldom retrogress so completely under specific treatment as the liver and pancreas affections. Prophylaxis here is the main thing, seeking to stamp out the syphilis in time, and to avoid physical strain and abuse of alcohol or tobacco. Gummas develop by preference where the tissues have been injured or overworked.

64. **Trauma and Tuberculosis.**—Mayer was unable to find in his experimental research any evidence indicating that blood-borne tubercle bacilli located by preference at a point in the lungs previously injured by trauma. But trauma reduces the resisting powers in general and thus favors the development of pulmonary tuberculosis, just as chilling, hunger, fatigue, etc., lower the barriers to infection. It follows from these premises that pulmonary tuberculosis may develop as the result of trauma even when the trauma did not act on the lungs. Peripheral injuries may be responsible for the development of pulmonary tuberculosis; that is, the disease might not have developed if it had not been for the trauma.

Mitteilungen a. d. Grenzgeb. der Med. und Chir., Jena

XXVIII, No. 2, pp. 213-414. Last indexed August 15, 1914, p. 614

65 *Chronic Thyroiditis and Exophthalmic Goiter. (Operationstod bei Thyreoiditis chronica; Beziehungen zwischen Basedowscher Erkrankung und Thyreoiditis.) H. Brünger.
66 *Serodiagnosis of Cancer. (Zur Carcinomdiagnose mittels des Abderhaldenschen Dialysierverfahrens.) S. Cytronberg.
67 Mechanism of Kidney Functioning. (Experimentelle Studien über die Funktion gesunder und kranker Nieren.) W. Baetzner.
68 *Factors in Coagulation of the Blood. (Gerinnungsfaktoren des hämophilen Blutes.) A. Fonio.
69 *Treatment of Myxedema. (Einfluss von Jod, Jodkalium, Jodothyrin und jodfreiem Strumapräparat auf den Stickstoffwechsel, auf Temperatur, Pulsfrequenz und auf das Blutbild von Myxödem.) *H. Frey.*
70 *Ulcerative Colitis. A. Albu.

65. **Chronic Thyroiditis Explains Death at Operation.**—Brünger's two patients were women of 35. The first required an operation for hernia; the other was operated on to relieve mild exophthalmic goiter. The first died as the general anesthesia was just commenced. In the second case the anesthesia was with scopolamin, an opium preparation and eucain, but the patient never roused, and the fourth hour the respiration became very slow, only twice in thirty-five seconds for a time. As the breathing improved the pulse grew worse, and death ensued sixteen hours after the operation. The thyroid was not much enlarged and only on one side. The first patient had had mild exophthalmic goiter diagnosed years before but it had apparently retrogressed completely long ago. In both cases, however, the thyroid showed changes typical of Basedow's disease and also of chronic inflammation and hyperemia. The findings in these

cases and in a thyroid removed from another patient confirm the analogy between Basedow's disease and Bright's disease. The various phases of the inflammation in the thyroid correspond to the changes in the kidneys which entail Bright's disease. In the above cases there was pronounced lymphocytosis and the ovaries were abnormally large. The first patient was of the type called status lymphaticus, the other status thymicus, as, although the thymus was not palpable yet it was abnormally large for the age.

66. **Serodiagnosis of Cancer.**—Cytronberg urges further study to avoid the present sources of error in Abderhalden's dialysis method of differentiating cancer. Even allowing for the present imperfections in the technic, there can be no question that it is highly specific especially with incipient cancer. Before accepting a reaction as negative, he applied the test with another specimen of cancer tissue and sometimes obtained then a positive response. Tissue from a solid cancer particularly rich in cells gives the most instructive reaction. The work issues from Goldscheider's service (Berlin) and the clinical details are compared with the results of the test in 97 cases including thirty-five certain and five of suspected cancer. The tabulated findings show remarkable unanimity in the different groups, especially the digestion of cancer tissue alone in the cancer group and of pancreas tissue alone in the group of diseases of the blood-producing organs.

68. **Factors in Coagulation of Blood.**—Fonio refers to hemophilic blood in particular as his further research has confirmed that the blood platelets are actively concerned in coagulation and that the red and white corpuscles are only passively enmeshed in the clot. The platelets in the blood of a hemophiliac are not below but are rather above the normal figure. According to his experience, about 350,000 is the average figure in health. The platelets from a hemophiliac seem to be less capable than from a normal person. When added to hemophilic blood they do not hasten clotting, but, strange to say, they do when added to normal blood, hastening the clotting even more rapidly than in normal conditions. These facts and others learned in his research demonstrate, he says, that the blood in hemophiliacs contains thrombogen in normal amounts and power but that the reaction between it and the platelets is insufficient because some element is lacking in the latter, and it is our task now to discover and supply this lacking element. The fact that the platelets were in normal numbers or above in one hemophiliac with 22 per cent. hemoglobin and only 2,036,000 reds, suggests that the production of the reds and of the platelets occurs at different points. The hemophiliac whose case is described in detail was of the fourth generation of a bleeder family. In purpura and similar hemorrhagic affections the number of platelets is abnormally low (149,048 and 0 in two cases cited), but the platelets seem to be normal in themselves. This difference in the platelets content may serve to differentiate such affections from true hemophilia.

69. **Influence of Iodin, Etc., on Myxedema.**—Frey gives the detailed findings in myxedema in a young woman and a girl of 10 given systematic courses in turn of iodin, potassium iodid, iodothyrin and of an iodin-free extract of goiterous thyroids. The metabolism, temperature, pulse and clinical picture of the myxedema were recorded from day to day over long periods. The research was done in Kocher's service and is practically a continuation of work along much the same lines in 1911. Iodin alone transformed the blood picture while thyroid extract free from iodin was entirely ineffectual in this line. Iodothyrin acts more powerfully than iodin alone. The neutrophils increased by 11.8 and 12 per cent. under the iodin and by 29 and 14 per cent. under the iodothyrin. The lymphocytes decreased by 15.8 and 14 per cent. under iodin and by 27 and 12 per cent. under iodothyrin. The effect was most pronounced in the younger patient. It was so striking that it suggests a possible benefit from iodin and iodothyrin in other pathologic conditions accompanied by lymphocytosis, such as the lymphoid form of leukemia.

70. **Ulcerating Colitis.**—Albu has encountered two acute and twenty-one chronic cases of ulcerative colitis, and comments on the remarkable lack of cicatricial changes afterward in the intestinal mucosa. Only when the ulceration had been unusually extensive or had burrowed very deep was there much scarring, but the mucosa showed striking anemia over large areas and it was sometimes hard and thick like leather. Treatment requires much perseverance on the part of both physician and patient; bed-rest, food that spares the bowels as much as possible, and astringents applied to the mucosa are the main features of treatment. A mixed albumin and vegetable diet has proved the best for these cases, the food all fluid or soft mashed, with gelatin in the form of meat, milk and fruit jellies. For local application he prefers a dry astringent powder applied through the rectoscope. When the latter is not available, a suspension of an astringent in ¼ liter tepid water can be injected. The enema is retained for twenty or thirty minutes. The mucosa must be thoroughly cleaned each time before the local procedure, flushing it abundantly through a two-way tube with a warm dilute soda solution. Gradual improvement and sometimes a complete cure was realized by these measures. In a few others the colitis recurred and the patients were finally cured only by making an artificial anus on the right side to leave the diseased gut at rest except for systematic flushing with astringent solutions from above. This required a year in one case; another patient still has his artificial anus after four years as every attempt to close up the opening has brought back the trouble anew. In the two cases in which the appendix fistula or artificial anus was closed after several months, the stools still show traces of blood and pus, and after every error in diet the condition becomes aggravated so the patients have to stay in bed for a time. His experience with surgical treatment has not been very encouraging; it should be restricted, he says, to the desperate cases in which almost any attempt to relieve is justified, especially when there are repeated hemorrhages. In a later series of five cases there is constant constipation and the inflammatory process seems to be limited to the ampulla of the rectum and entrance to the sigmoid flexure. A suspension of bolus alba and animal charcoal by the mouth and by the rectum has proved more effectual in his recent experience than anything previously tried in one of his rebellious cases. On a mixed diet there has been no return of diarrhea for five months to date. A tablespoonful of the bolus and animal charcoal mixture in a glass of water is taken half an hour before breakfast, and before this, after the intestine has been rinsed clean with warm soda solution, an injection is made into the rectum of a tablespoonful of the mixture in ¼ liter of warm water. The number of passages and the tenesmus became reduced at once and there was less pus evident. He gives a colored plate to show the typical rectoscope findings with ulcerative colitis.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

November, XL, No. 5, pp. 537-632

71 Puerperal Infection from Retention of Remnants of Placenta. F. Ahlfeld.
72 Tuberculosis of the Genital Organs in Little Girls. G. Graefe, Commenced in No. 4.
73 *Does Menstruation Influence Hemolysis by Vaginal Bacteria? Hellmuth.
74 Serodiagnosis of Pregnancy. (Spezifität der Abderhaldenschen Fermentreaktion.) M. Fetzer.

73. **Influence of Menstruation on Hemolysis of Vaginal Bacteria.**—Some authors hold that hemolysis is a specific characteristic of certain very virulent strains of streptococci. Others consider it only an accidental characteristic dependent on the blood content of the nutrient medium. Hellmuth describes in detail a series of experiments undertaken to show whether hemolysis does occur with vaginal bacteria during menstruation, and he finds that it does not. Even in two cases in which metrorrhagia had persisted for weeks, no hemolytic bacteria could be demonstrated. In the three cases in which hemolytic bacteria were found, he thinks that they did not develop during menstruation from non-hemolytic ones, but reached the vagina through invasion or inoculation. He does not feel that he has proved that the faculty of hemolysis could not develop under long continued hemor-

105. **The Blood in Inherited Syphilis.**—Chiaravalloti analyzed the blood of 150 children with certain inherited syphilis. The blood was of the anemic type in all, whatever the age or manifestations of the syphilis. The hemoglobin ranged from 12 to 75 per cent., averaging about 56.8. The reds were also usually below the normal proportion. The differential leukocyte count is extremely variable but nothing strictly characteristic was observed. Abnormal findings in the leukocyte count in any direction may confirm the assumption of an inherited taint. Very frequently an inherited taint with both syphilis and tuberculosis was apparent.

106. **Fermentation Test Applied to Infants' Stools.**—Luna states that the fermentation test may sometimes reveal in olerance of carbohydrates escaping all other methods of examination when there is intestinal inflammation. The sound infant intestine eliminates only minute amounts of carbohydrates as waste. Infants with flatulent dyspepsia and positive findings with the fermentation test should be fed very little carbohydrate but much albumin. He tabulates the findings in five typical cases showing the prompt improvement under dietetic treatment on these premises.

107. **The Tryptophan Reaction in Children's Cerebrospinal Fluid.**—Segagni reports that in eight cases of tuberculous meningitis, one of cerebral hemorrhage and one of a cerebellar tumor, the tryptophan reaction was constantly negative.

108. **Intravenous Injections in Infants.**—Maggiore confirms the advantages and the convenience of selecting the external jugular vein as the one to puncture in drawing blood or for intravenous infusion. The child lies on his back, the head turned away and held by another person. He uses a needle and rubber tube and bulb rather than a syringe, and says that the large branches of the vein can be utilized in the same way in case it is necessary to repeat the puncture.

Policlinico, Rome

November 22, XXI, No. 47, pp. 1633-1664

110 No Apparent Change in Mind or Character after Removal of Right Frontal Lobe of Boy of 14. (Di una lesione traumatica del lobo frontale destro.) T. Lucherini.

November 29, No. 48, pp. 1667-1704

111 Mechanism of Production of Tube-Casts in Urine. (La genesi e la natura dei cilindri granulosi e ialini, chiarite mercè un nuovo metodo di ricerca.) C. Minerbi.
112 Typhoid in District Near Rome. P. Cataldi.
113 Sugar Solutions in Therapeutics. (L'uso dei sieri zuccherati in terapia.) G. Sabatini.

Riforma Medica, Naples

November 21, XXX, No. 47, pp. 1289-1316

114 *Pathogenesis of Peptic Ulcer. R. Crescimone and B. Anglesio.

114. **Anemia a Factor in Peptic Ulcer.**—Crescimone and Anglesio induced anemia in dogs by daily subcutaneous injection of 1 per cent. solution of pyridin. By the tenth day the hemoglobin had dropped to 25 or 30 per cent. and the reds to about two million. The anemia continued a progressive course, the animals dying between the tenth and forty-fourth day with one exception. In fifteen of the sixteen animals lesions were found in the stomach or duodenum or both and nowhere else. These lesions displayed the characteristics of peptic ulcers, and they regard them as analogous to the first stage of chronic ulcer in man. In some of the dogs the vagus had been severed, and this seemed to aggravate the lesions. The experiments reported and the literature reviewed seem to sustain the assumption that an anemic condition is an important factor in gastric or duodenal ulcer, and that treatment of the peptic ulcer should not disregard the underlying anemia.

Brazil-Medico, Rio de Janeiro

October 15, XXVIII, No. 39, pp. 365-372

115 Mycosis with Red Saccharomyces; Seven Cases. (Mycose humana. "Saccharômyces rubrum endothrix" n. sp.) O. Magalhães.

Hospitalstidende, Copenhagen

November 25, LVII, No. 47, pp. 1393-1416

116 Light as a Stimulant for Metabolism. (Et grundincitament i den interne Medicins fysiske Terapi. Lyset som stofskifteincitament.) V. Rubow.

Norsk Magazin for Lægenvidenskaben, Christiania

December, LXXV, No. 12, pp. 1369-1508

117 *Effect of Digitalis on the Heart and Kidneys. (Digitalisvirkninger.) P. F. Holst.
118 *Abnormal Accumulations of Serous Fluid Share in Circulation. (Deltar hydroper i legemets væskecirkulation?) O. Scheel.
119 Epidemiology of Scarlet Fever and Diphtheria at Christiania. (Smitteforhold i Kristiania ved skarlagensfeber og difteri.) O. Lorange.
120 Salvarsan in Frambesia. J. Cammermeyer.
121 *Salvarsan Alone in Syphilis; Four Years' Experience. R. Krefting.
122 *Etiology of Dementia Praecox. (Aarsaken til dementia præcox.) B. Ebbell.

117. **Action of Digitalis.**—Holst discusses the history of and reviews recent literature on this subject and then relates a number of unusual cases to show the action of digitalis in different conditions. It may have a diuretic action without or before manifesting any influence on the heart. Some patients can stand remarkably large doses; one man of 60 took 7.3 gm. of digitalis in twenty-two days with great benefit and no apparent by-effects. Another patient, a telegrapher of 22, developed symptoms of heart-block with Adams-Stokes phenomenon during the course of acute articular rheumatism, and the symptoms grew worse under a dose of digitalis but subsided entirely an hour after subcutaneous injection of 2 mg. atropin, and complete recovery followed.

118. **Effusions, Etc., Share in Circulation.**—Scheel injected 0.10 gm. of methylene blue into the pleural effusion of a woman with severe valvular disease. The urine voided the next day and for seven more days was highly colored by the stain, showing that the pleural effusion participates in the circulation, even when it is impaired as seriously as in this case. This assumption was further confirmed by the discovery that the edema fluid in the legs was also tinted by the stain. In other patients similar tests were made with 1 gm. hexamethylenamin, by the mouth and with urea, showing that each passes into the edema and pleural effusion in a very few hours. A dropsical accumulation therefore must be regarded as a flowing stream instead of a stagnant pond.

121. **Four Years of Exclusive Salvarsan Treatment of Syphilis.**—Krefting never had any threatening by-effects from the salvarsan in the 718 cases of syphilis in which he has given it, and all but 3 were outpatients, and the drug was given by intravenous infusion. The cure was so complete in 10 cases that the men have acquired syphilis anew since. In the 221 cases of primary syphilis, 3 were given at least three injections and 70 only one or two—all with a two weeks' interval and with doses of 0.5 to 0.6 gm. for men and 0.3 to 0 4 gm. for women. His experience teaches, he says, that salvarsan is just as effectual alone as when combined with mercury, and that there are no actual contra-indications.

122. **Dementia Praecox and the Thymus.**—Ebbell presents evidence which seems to demonstrate a connection between some primary anomaly or acquired disorder of the thymus and the development of clinical symptoms of the dementia praecox type. The pathologic anatomic findings in dementia praecox, he continues, seem to be identical with those found in animals after partial destruction or total removal of the thymus. This assumption of thymus insufficiency as the cause of dementia praecox harmonizes with the observation of its hereditary nature and with the influence of acute infectious diseases and abuse of alcohol. When the dementia praecox develops in childhood there may be some congenital deformity of the thymus. Attempts to treat animals and human beings with thymus extract or in substance have given no results. This is but natural, Ebbell remarks, as an artificial chemical mixture or devitalized tissue is unable to do the work of the living thymus. Transplantation of thymus tissue seems the only encouraging prospect, and progress must be sought along this line, although Klose and Vogt have reported disappointing results in two dogs; scraps of thymus tissue were implanted in the omentum and spleen of two thymectomized dogs but the scraps were all absorbed in time.

Ugeskrift for Læger, Copenhagen

December 10, LXXVI, No. 50, pp. 2117-2144

123 Research on the Precipitin Reactions. (Fældningsreaktioner.) H. I. Bing and H. Trier.

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INSTITUTIONAL MORTALITY OF THE NEW-BORN

A REPORT ON TEN THOUSAND CONSECUTIVE BIRTHS AT THE SLOANE HOSPITAL FOR WOMEN, NEW YORK *

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NEW YORK

Much interest has recently been awakened in a study of infant mortality during the early weeks. The importance of such a study is evident for several reasons. According to the best recent statistics available, one-third of the deaths of the first year occur in the first month of life, and seven-eighths of these come in the first two weeks. Using our own statistics to supplement these, of 100 infant deaths during the first year, approximately

33 occur in the first month
28 occur in the first two weeks
22 occur in the first week
13 occur on the first day

This is a concrete statement of the problem of infant mortality from one point of view. While the campaign for the reduction of infant mortality has greatly lowered the deaths from diarrheal and nutritional diseases and has made some considerable impression on respiratory and contagious diseases, thus far it can hardly be said to have touched at all the causes of the large group of deaths in the first month. Finally, at no time of life is diagnosis so difficult and the records of vital statistics so unreliable in giving the exact causes of death as during the first month.

It was thought, therefore, that an analysis of a group of cases from an obstetric hospital would shed considerable light on several phases of the problem under discussion. The records of the Sloane Hospital for Women in New York have been kindly placed at our disposal by Professor Cragin for this study. These records are especially valuable for such an investigation as they are unusually complete and have been kept with great care.

While the number of cases analyzed is small when compared with the statistics of a large city, the hospital figures have the greatly added value of more accurate diagnosis and are in all respects much more reliable than records available from general vital statistics.

What is an average or normal mortality among 10,000 births? How do the general figures of the city compare with those of a special institution? How much of the general mortality of the first two weeks could be prevented by proper obstetrics? How much of it is due to malformations and unavoidable accidents of delivery — causes which are beyond the reach of usual or even extraordinary preventive measures? Some of these questions we hoped to answer.

Ten thousand consecutive confinements in the Sloane Hospital for Women have been analyzed for this paper. These occurred during a period of about six and one-half years, ending in October, 1913. They were divided as follows:

Abortions (fetus non-viable, less than 37.50 cm. in length)	253
Stillbirths (fetus viable, 37.50 cm. or over in length)....	429
Living births	9,318
	10,000

The hospital receives but few waiting women; nearly all are admitted after labor has begun. Patients are regularly discharged on the fourteenth day, and complete mortality records are therefore possible only for this period. In many cases infants who were ill, not thriving or premature, were kept for a longer time and some interesting facts regarding hospital mortality during a period longer than fourteen days are presented in this report.

In our paper we have first followed the fortunes of the 9,318 infants born alive, and later have analyzed the stillbirths.

The total deaths occurring in the first fourteen days were 291, these being 3.1 per cent. of infants born alive. Of these, 159, or 54.6 per cent., occurred in infants born prematurely; 132, or 45.4 per cent., occurred in infants born at term. Prematurity must, therefore, be recorded as the largest single factor in infant mortality of this period.

The following tabulation gives the exact time of death in premature infants and those born at term:

	Premature	Full Term	Total
Died on first day	102	38	140
Died on second day	8	10	18
Died under one week	135	98	233
Died during second week	22	34	56

Of infants born alive, 1.5 per cent. died on the first day;[1] 2.5 per cent. under one week; 3.1 per cent. during fourteen days. Nearly one-half (48 per cent.) of the deaths of the first fourteen days were on the first day.

Curiously, a report by Kerness[2] from the Universitäts Frauenklinik, Munich, for four years, 1907-1911,

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* Read before the American Association for the Study and Prevention of Infant Mortality, at the Fifth Annual Meeting, Boston, Nov. 12-14, 1914.

[1] Twenty-seven died during the first two hours. Were these classed as still-births, as is not infrequently done, the total mortality under 14 days would be lowered from 3.1 to 2.8 per cent.

[2] Kerness: Ztschr. f. Kinderh., 1912, Referate, iv, 19.

gives exactly the same mortality, 2.5 per cent. of 9,610 living births during the first eight days. The figures given by him for the other periods are not recorded, so that they cannot be compared.

Infants have been classed as premature if they were born after the beginning of the twenty-seventh week of gestation and before term. As reliable information on this point was not usually possible to obtain, the length, weight and general development of the child were also used as a guide. Infants have been considered premature who measured less than 46 cm. (18½ in.) in length, and also those whose weight was less than 2,275 gm. (5 pounds). Only two cases have been included among the prematures in which these figures for weight and length were both exceeded; these were regarded as premature for other reasons.

The measurements of the premature infants were as follows:

Length	
40 to 44 cm.	90 infants
44 to 47 cm.	64 infants
47 to 48½ cm.	10 infants

Weight	
Under 3 pounds.....	40 infants
3 to 4 pounds	72 infants
4 to 5 pounds	63 infants
5 pounds and over ..	8 infants

Only two of this last group were over 46 cm. in length.

The causes of the premature birth in many of the cases were not recorded, but certain facts were obtainable from the records. The age of the mother, the condition of the baby and the number of the pregnancy were usually noted. The age of the mother seemed to be without influence. In only four instances was the mother under 15½ years of age, and in no case under 14 years. Three others were between 17 and 19 years; 103 between 19 and 30 years; 46 between 30 and 40 years, and only 1 was over 40 years. In 90 cases the mother was a multipara; in 70 cases a primipara; one unknown. The baby's condition was recorded as good in only 13 per cent.; fair in 31 per cent.; but poor in 56 per cent.

The labor was spontaneous in 132 cases and induced in 27 cases; in 20 of the latter the reason was toxemia of pregnancy.

We will now pass to a consideration of the causes of deaths during the first two weeks, taking them up in the order of their frequency. These are shown in the accompanying table.

CAUSES OF DEATH DURING FIRST FOURTEEN DAYS*

	Under One Day		Under 7 Days		Seven to 14 Days		Total Under 14 Days		Grand Totals
Congenital weakness	**93**	2	**120**	7	**14**	2	**134**	9	143
Accidents of labor	**1**	14	**1**	32	..	..	**1**	32	33
Pneumonia	..	..	**3**	9	**3**	13	**6**	22	28
Atelectasis	**3**	7	**3**	14	**1**	7	**4**	21	25
Congenital syphilis	**5**	..	**6**	1	**6**	..	**12**	1	13
Malformations ..	..	4	**2**	7	..	3	**2**	10	12
Hemorrhage	..	..	..	8	..	2	..	10	10
Sepsis	..	..	..	2	..	7	..	9	9
Asphyxia	..	7	..	8	..	..	..	8	8
Accidental	..	1	..	2	..	..	..	2	2
Undetermined ...	..	3	..	8	..	..	..	8	8
Totals	**102**	38	**135**	98	**24**	34	**159**	132	291

* Ten thousand confinements: Abortions, 253, stillbirths, 429; living births, 9,318. (Prematures—heavy type.)

CAUSES OF DEATH DURING FIRST FOURTEEN DAYS

Congenital Weakness.—This was assigned as the cause of death in 134 premature infants, and in 9 full-term infants, making a total of 143, or about one-half (49.4 per cent.) of the total deaths under 14 days. This, then, is one of the very largest and most important factors of infant mortality. Its cause must be sought in the physical condition of the mother during her pregnancy, but not in circumstances connected with delivery.

Accidents of Labor.—Accidents of labor were responsible for but 33 deaths, only one of which was in a premature infant. The most important accidents were intracranial hemorrhage and injuries to the head. The single premature infant died from a meningeal hemorrhage aften ten hours; no forceps were used, and the diagnosis was confirmed by necropsy. Intracranial hemorrhage in infants born at term was given as the cause of death in 18, nine coming to necropsy. Of these 18 cases, forceps were used in 7, and 10 were breech presentations.

Besides the cases classed as intracranial hemorrhages, injuries to the head were put down as the cause of death in 10 cases, necropsies being made in 3. Of the 10 cases, forceps were used in 8, and 2 were breech presentations. The most frequently mentioned causes of these accidents were difficult deliveries, persistent malpresentations and prolonged labor, the latter usually before admission to the hospital. Combining the above we have intracranial hemorrhage or injury to head or upper part of spine as the cause of death in 29 cases; of which 15 were forceps, 12 were breech deliveries and the diagnosis confirmed by necropsy in 13 cases.

Other accidents of labor causing death in rare instances were: Rupture of the liver, 2 cases; rupture of hematoma of the liver and peritoneal hemorrhage, 1 case; rupture of umbilical cord before labor, 1 case.

In 10,000 deliveries, therefore, accidents of labor caused death in but 0.33 per cent. of the cases. Of the 291 deaths, 33, or 8.8 per cent., were due to this cause. Very few of the accidents of labor mentioned here belong to the preventable causes of infant mortality. That death was due to such causes in but 0.33 per cent. is explicable only by the skilled management of complicated cases. Outside of a special hospital the death-rate from causes of this sort would surely be higher; but in such an institution, even when we consider that a much larger proportion of complicated cases are treated than occur in general practice, deaths from accidents of labor form an astonishingly small fraction of the infant mortality.

Malformations and Congenital Diseases Other Than Syphilis.—Of the 12 deaths from these causes, 4 were cardiac malformations; 2, intestinal; 2, of the nervous system, and 4 were recorded as status lymphaticus. Only 2 were in premature infants; of the 10 occurring in infants born at term, 8 were confirmed by necropsy. Monsters have been included among the stillbirths. These figures of course do not represent the number of malformations in 10,000 births, but only those which caused death in the first fourteen days. Four other deaths from malformations occurred in the hospital between the fourteenth and the forty-second day.

Atelectasis.—This was a cause of death in 25 infants during the first fourteen days, 4 of these being in premature and 21 in infants born at term. They form a total of 8.6 per cent. of all deaths. Necropsies were obtained in only 5 cases. Atelectasis is also given as a cause of death in 7 infants in the hospital after the fourteenth day. The causes of atelectasis were not determined. All but 3 were normal deliveries, one of these being a breech, and 2 were cases in which forceps were used.

Asphyxia Neonatorum.—Asphyxia was a cause of death in eight born at term; in none of those born prematurely. It caused 2.7 per cent. of all the deaths in the first fourteen days. Six of the deaths occurred during the first six hours and all of them occurred on the first day of life. Among the causes of asphyxia were mentioned: Laryngeal obstruction; knot in the cord; cord tightly around neck; a loop of cord pulled out alongside the head with the forceps; application of the forceps to the after-coming head and inhalation of liquor amnii. In two cases there was placenta praevia.

Congenital Syphilis. — The records of the Sloane Hospital offer but a limited field of observation on the results of this disease for two reasons. In the first place, cases which are markedly and definitely syphilitic are not, as a rule, received, although in fact a good many are admitted where symptoms are not very marked. In the second place, the Wassermann test was applied in but a small proportion of the cases used in these statistics. The figures for syphilis, therefore, are much smaller than doubtless would have been obtained were the cases taken from an institution of a different character, or from the city records outside of hospitals.

Congenital syphilis was named as a cause of death in 13 infants during the first fourteen days; 12 were premature and one born at term. In addition, there were 6 others, 3 premature and 3 infants born at term that died from this disease during their stay in the hospital later than the fourteenth day. The diagnosis of syphilis, as indicated above, rested in only a small number on the Wassermann test, but on the other symptoms, such as hydrops of the placenta, definite evidence of syphilis in the mother, pathologic evidence in the placenta, a history of other premature births or previous miscarriages, macerated stillbirths, etc.

Hemorrhage of the New-Born.—No deaths in premature infants were recorded from this cause. Ten occurred in infants born at term, forming 3.4 per cent. of the deaths in the first fourteen days. The earliest death occurred on the third day, three each on the fourth and fifth day, one each on the sixth, ninth and eleventh day; there was one also on the sixteenth day. Six received some form of serum treatment. Two had received full doses of human serum without effect; two, single doses of rabbit serum without effect; one, human serum, late and in small doses, without effect; in one other, full doses of rabbit serum, late, without effect.

Sepsis.—No premature infants died from this cause; but of those born at term, 9 died from sepsis, making 3 per cent. of the deaths in the first fourteen days. However, 5 additional deaths occurred in the hospital from sepsis between the fifteenth and twenty-fifth days. Of the infants dying before the fourteenth day, cord infection, phlebitis, and abscess of the liver were present in 3 cases; cellulitis of the scalp and infection of the antrum of Highmore in one each, and 2 were of unknown origin. Deaths from sepsis later than the fourteenth day were 5, from the following causes: meningitis secondary to abscess of the scalp, cellulitis of the neck, suppurative mastitis, multiple abscesses; and one, cause not known. Two were forceps deliveries. The 12 deaths from sepsis were scattered through five years, not more than 2 deaths from this cause occurring in any single year. This is a striking evidence of the efficiency of the asepsis of the institution.

Pneumonia.—Pneumonia was the cause of death in 28 infants, or 9 per cent. of those occurring during the first fourteen days, and of 38 infants who remained in the hospital for a longer time, none, however, more than thirty-two days. Thus the total number of deaths from pneumonia was 66, or 17 per cent. of the total 387 deaths which occurred among infants while in the institution. There were twice as many deaths as those due to accidents of labor. Pneumonia thus ranked next to congenital weakness as a cause of death during this period. So far as season is concerned, no special influence is seen on the occurrence of pneumonia; the largest number (39 per cent.) occurred in the fourth quarter of the year.

Several distinct house epidemics of pneumonia were observed. In March, 1909, four deaths occurred from this cause within two weeks; in October, 1910, there were 5 deaths in four weeks; in September and October, 1912, there were 7 deaths in five weeks; in December, 1912, there were 5 deaths in three weeks. Many of these cases were diagnosticated lobar pneumonia and in a large proportion of those coming to necropsy extensive consolidation of the lung was found. In nearly all of the cases, however, catarrhal symptoms of the upper respiratory tract preceded the pneumonia. Only a small proportion of the pneumonias were seen in the first week of life, nearly two-thirds of the deaths occurring between the fourteenth and seventeenth days.

In obstetric hospitals, as in all institutions where infants are brought together, respiratory infections must therefore be reckoned among the greatest dangers to which these small inmates are exposed. More liberal accommodations for babies must be furnished than those provided in most of our obstetric hospitals and greater care to prevent crowding must be exercised. It is also imperative that those infants who are suffering from even the milder types of infection should be promptly and completely isolated from the healthy, and that nurses also with infectious colds should be temporarily relieved from duty.

STILLBIRTHS

Probably no part of vital statistics is so unreliable as the records of stillbirths. This is due to many causes. The first is that there is no general agreement among the keepers of records as to what should be called a stillbirth. In New York City and State a case is classed as a stillbirth in which a child has never breathed nor shown other signs of life. This is perhaps the best definition that can be given. There is good ground for the belief that for religious reasons death certificates are sometimes written for stillbirths ascribing the death to other conditions. This would tend to raise slightly the figures for infant mortality during the first days of life. But there is not the slightest doubt that a considerable proportion of stillbirths are never registered at all. A convenient and not an uncommon way of reducing the infant mortality rate is to class as stillbirths all the deaths that occur soon after birth. A clerk of the board of health in a middle western city stated to one of us that prior to 1911 death certificates in his city for infants under one week of age were not filed at all. Some registrars of vital statistics have admitted that they were accustomed to class as stillbirths all children dying in two hours; others, all who died in the first two days. In our figures, had we classed as stillbirths all dying in the first two hours, we would have reduced our mortality 10 per cent. Had we excluded the deaths of the first two days, the mortality would have been reduced 50 per cent. From all these considerations it is evident that it is somewhat difficult to determine with even approximate accuracy what is the proportion of stillbirths to living births. The records of New York City may be taken as fairly trustworthy for a large municipality — they are much more reliable than those of most cities — especially since the classification mentioned above is rigidly adhered to. The past records of many cities are entirely unreliable and we cannot compare infant mortality figures until definite knowledge of what is included as stillbirths has been determined.

The percentage of stillbirths in an institution where careful records are kept is therefore of special interest. In the 10,000 confinements at the Sloane Hospital there were 429 stillbirths or 4.29 per cent. It is interesting to see how this compares with the general records of the city. In 1912 the stillbirths were 4.64 per cent. of the 142,280 total reported births; and in 1913 they were 4.65 per cent. of the 141,765 reported births. These figures are sufficiently close to those from the Sloane Hospital to add much to their reliability. While the records of birth registration in New York are not absolutely complete, the Registrar of Vital Statistics estimates that as a result of agitation and penalties enforced during recent years, over 98 per cent. of the births are now recorded.

In comparing hospital with general statistics it should be remembered that difficult and complicated cases form a much larger proportion of those admitted to a special hospital than occur in general practice. This would have the effect of considerably raising the proportion of stillbirths; since in half these the cause of the stillbirth is prolonged, difficult or complicated labor. But it would be expected that more skilful obstetrics and better care would tend to lower the proportion of stillbirths. That the percentage was reduced to 4.29 at Sloane certainly speaks well for the character of the work done there. We have been unable to obtain comparable statistics from other lying-in hospitals in this country. Kerness, however, has given the figures from the *Universitäts Frauenklinik* in Munich. Among 10,297 confinements in four years ending October, 1911, there were 5.22 per cent. stillbirths. What the percentage would be in our different cities were they all reported and honestly registered, one can only conjecture. Taking the Sloane figures as the basis of an opinion they ought not in general practice to be much over 4 per cent.

Period of Gestation.—It was difficult to determine the period of gestation with anything approaching accuracy. This is best estimated by the length of the fetus.

Less than	42.5 cm. (16¾ in.)	56 cases
42.5 to	47.5 cm.	112 cases
Over	47.5 cm. (18¾ in.)	261 cases

More than half these cases were therefore evidently premature infants.

Of the cases, 75 per cent. were admitted during labor and but 25 per cent. were admitted previous to labor. In nearly half the cases (48 per cent.), as the fetal heart could not be heard, the child was presumably dead on admission; while in 250 (57 per cent.), the heart was not heard during labor. Further evidence of the great number of deaths before admission was the fact that in 162 cases (37 per cent.) the fetus was macerated.

The mode of delivery was as follows:

Normal	189 (44 per cent.)
Version with breech extraction	80 (18 per cent.)
Breech	76 (17 per cent.)
Forceps	59 (13 per cent.)
Craniotomy*	20 (4.6 per cent.)
Cesarean section	5 (1.1 per cent.)

*Craniotomy was done on only dead fetuses.

Particular interest attaches to the causes assigned for the death of the fetus.

Prolonged, difficult or complicated labor: (Difficult 75; prolonged, 25; placenta praevia, 29; prolapsed cord, 38; cord around neck, 29; accidental hemorrhage, 18)	196 (45 per cent.)
Toxemia of pregnancy	63 (14 per cent.)
Syphilis	40 (9 per cent.)
Prematurity	18 (4 per cent.)
Monsters	7 (2 per cent.)
Unknown	87 (21 per cent.)

SUMMARY

The deaths in the hospital during the first fourteen days were 3 per cent. of the living births. For half this number prematurity was responsible.

Forty-eight per cent. of the total deaths and 66 per cent. of those due to prematurity occurred on the first day.

Congenital weakness and atelectasis together made up 58 per cent. of the total deaths.

The mortality from conditions intimately connected with delivery — accidents of labor, hemorrhage, sepsis and asphyxia — together made up but 20 per cent. of the deaths of the first fourteen days.

Malformations and congenital diseases other than syphilis caused 4 per cent., and syphilis 4 per cent.

The only important disease developing after birth was pneumonia.

Stillbirths must be reckoned as one of the large problems in infant mortality; they are one and a half times as many as the deaths from all causes during the first two weeks. Except for the larger rôle played by syphilis, the causes of stillbirth in no way differ from those which produce death during the first days of life.

When we come to consider to what degree preventive measures might influence the mortality of the first two weeks of life, two things stand out prominently: The great number of deaths from congenital weakness can be reduced only by care of the mother during her pregnancy; the number of stillbirths and the deaths from causes connected with parturition can be largely reduced by good obstetrics.

Uses Served by Morbidity Reports.—In some diseases morbidity reports make it possible to see that the sick receive proper treatment, as in ophthalmia neonatorum, diphtheria, and, in certain cities, tuberculosis. The reporting of cases of ophthalmia in the new-born makes it possible to save the sight of some infants who would otherwise not receive adequate treatment until after much damage had been done. In diphtheria the health department can be of service in furnishing antitoxin. Some cities furnish hospital or other relief to consumptives who would otherwise be without proper treatment.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914.

SARCOMA OF THE TONGUE

A STUDY OF THE PUBLISHED CASES WITH REPORTS OF TWO NEW CASES

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A diagnosis of sarcoma in any part of the body seems always to fill the mind of the attending surgeon with a certain foreboding of ill in the prognosis. Rightly or wrongly, there persists for a time at least in the minds of those near the patient the haunting fear that there is far more likelihood of recurrence, or of metastasis, than probability of complete and permanent cure after the first surgical intervention.

The cases here reported aroused an interest, and a study of the condition was undertaken to find out the known and published facts concerning sarcoma of the tongue. The reader will not be wearied with airy speculation, and scant space will be given to any theoretical opinion, no matter how eminent its source.

Search through the literature (English, French and German) has brought to my notice fifty-eight reported cases. From a study of these and the two of my own, the following opinions were formulated.

Of course, one is aware that reports of not all the cases are published. The same is true of sarcomas elsewhere as of other conditions. However, one will conclude that at the present day the disease that can boast of only fifty-eight reported cases must be rare. Most of the cases have been recorded since 1885. Butlin at that time wrote of sarcoma of the tongue, "It would be quite useless to try to write an account of it which shall be useful."

The best article I have found on the subject is that of Fripp and Swan[1] herein frequently referred to.

ETIOLOGY

Age—It is the commonly accepted opinion that all varieties of sarcoma are more common in children. I think this is the usual medical school teaching. Let us see whether it be true with regard to sarcoma of the tongue.

The disease may be prenatal in onset — the congenital type. There are three such cases on record, those of Jacobi,[2] Naegele[3] and Delbanco;[4] that is to say 4.9 per cent. of all reported cases were congenital.

Of the postnatal type the earliest was one appearing in a 7-weeks-old child.[5] The next earliest was in a child of 10 months,[6] and this completes the number of cases of the acquired type found in children under 1 year, 3.2 per cent.

Two more cases, one at 2 and the other at 4 years, make a total of four seen in the first decade, that is, 7.8 per cent. of the acquired type. No cases whatever were reported between the ages of 4 and 14, and all of those occurring in the second decade were seen between the ages of 14 and 19. Three cases at 17, two at 19 and one at 14 make up the total, six cases, between 10 and 20 years, or 11.7 per cent. Adding together those in the first two decades, we find ten cases showing up in patients under 20 years, 19.6 per cent. of all.

I believe that this ought to convince one that the disease is not more common in the early years of life.

After adult life is reached the condition is more frequent. Thus in the twenties there are ten reported cases, 19.6 per cent., or just exactly as many as are found in the first two decades put together. The oldest of these was 28 and the youngest 22 years of age.

In the fourth decade the maximum of frequency is attained — fourteen cases, or 27.4 per cent. of all acquired cases, were found in the thirties.

Between 40 and 50 are only six, 11.7 per cent., and in the sixties only four are recorded, 7.8 per cent., and the oldest of these was 65. The oldest patient of all was 71, and this was the only one found in the eighth decade.

In seven of the cases recorded no mention was made of the age. These were thrown out and the foregoing percentages calculated on a total of fifty-three cases of the acquired type.

Sex.—On looking over the cases one is impressed with the preponderance of males — thirty-three cases. The number of females is twenty. In seven of the cases no mention of the sex was made. The relative known proportion of males to females is 33 : 20, or 62.2 : 37.7 per cent. One cannot conclude that it is more common in either sex at any particular period of life, the foregoing relations being fairly well maintained in all the decades.

Nationality.—In only seven cases was mention made of the nationality of the patient. Five of these were Europeans and the other two (my cases) were American born, the one of Irish and the other of Italian descent.

Occupation.—This was stated in ten cases, one was a pupil in a grammar school and one in high school. Two were medical students, one was a teacher, and the remainder were of the laboring class. One should not be surprised to find most of the cases coming from among the laboring class, nor should one hastily conclude that the disease must be more common in laboring persons. There are probably more persons in this than in any other class, and the percentage of cases may not be higher.

Previous Injury.—In only ten of the cases was any mention made of previous injury. In four the tongue had been bitten some time previously, ranging from eight months[7] to eight years (author's Case 2). Another had a broken tooth, which irritated the side of the tongue, and heavy cigaret smoking was supposed to have increased the irritation.[8] In one a cyst had been removed five years before and the tumor grew in the scar.[9] In one the tongue had been scalded two years previously.[10] In one a beard of wheat penetrating twenty-two years,[11] and in one a fish-bone entering two months before[12] may have been etiologic factors. It is possible then that previous injury may play a part in the etiology in at least 16 per cent. of the cases of sarcoma of the tongue.

PATHOLOGY

Site.—The location of the growth is stated with fair accuracy in forty cases. In fifteen cases it was said to have been located at the tip or within half an inch therefrom. In only three[13] of these was there at first involvement of the under surface, and one is said to have involved the whole thickness of the anterior third.[14] Of these fifteen cases, six were on the right and only one on the left, while the remaining eight were about the middle of the tip. The total number found involving the base of the tongue was nineteen. Five cases were said to have been on the right and two on the left side of the base. In five cases "the right half" and in three "the left half" was said to have been involved.

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[1] Fripp and Swan: Guy's Hosp. Rep., 1902, p. 88.
[2] Jacobi: Am. Jour. Obst., 1869, ii, 81.
[3] Naegele: Inaug. Dissert., Kiel, 1900 A (Foote).
[4] Delbanco: München. med. Wchnschr., 1898, xlv, 155.
[5] Gross: Philadelphia Med. Times, 1872, p. 272.
[6] Targett: Guy's Hosp. Rep., 1890, p. 24.
[7] Dunham: Am. Jour. Med. Sc., 1895, cx, 259.
[8] Bleything: New York Med. Jour., 1883, p. 683.
[9] Murray: Ann. Surg., 1895, xxii, 271.
[10] Littlewood: Lancet, London, 1898, i, 507.
[11] Serafini: Rev. de chir., 1909, xl, 242.
[12] Downie: Brit. Med. Jour., 1899, ii, 1065.

Altogether then, sarcoma of the tongue seems to have been more common on the right side and toward the base, although no one part of the tongue can be said to be an especially favorite site of the growth.

The sarcoma begins most often in the tongue substance and grows toward the dorsum, soon causing a projection on the upper surface. In one instance, however, in which it sprang from the root or the base of the tongue above the hyoid bone, it grew downward and forward, causing a bulging beneath the chin.[15] Here, as elsewhere, it is the rule for sarcoma to infiltrate the muscles lying in its neighborhood, growing between the fibers, which are soon destroyed. It soon traverses the median septum and invades the other side of the tongue. It spreads to the faucial pillars and to the floor of the mouth, and when either or both of these become involved the organ becomes fixed, thus rendering the patient unable to protrude the tongue, and increasing the difficulty of swallowing.[16]

The rate of growth varies greatly. One case was said to have been growing twenty-two years.[11] It had, however, begun to grow rapidly a short time before operation. In by far the greater number of cases the patient came for relief in less than ten months after the appearance of the growth, in one within six weeks.[17]

Pedicle.—The tumor has been provided with a pedicle or stalk in six instances.[18] In one of these a growth could be traced through the pedicle into the tongue,[19] and in another[12] there was recurrence, so that in these two at least there can be no doubt as to the correctness of the diagnosis; the others are doubtful.

Size.—The size of the tumor is mentioned quite frequently and varies within wide limits. The smallest was only "the size of a large pea."[20] Another was "as large as an orange," while one weighed 400 gm.[21] and the others varied between these limits. The smallest was of the round-cell type while the largest was a "fascicular sarcoma" (spindle-cell sarcoma?). Many were said to have been "walnut-sized," "the size of a hen's egg," etc., while some were diffuse and the size not stated.

Surface.—The color of the mucous membrane covering the tumor as a rule does not vary much from normal. There may be dilated veins over the surface[22] or the mucous membrane may be very thin or there may be abrasions or excoriations which bleed easily when touched. In both my cases the mucosa over the summit of the tumor was paler than normal, as though stretched over an avascular body, while in Foote's case the color was darker than normal. Hutchinson noted that those growing up from the dorsum behind the circumvallate papillae were likely to present a papillary surface. Generally, the mucous membrane covering the tumor is smooth, and when the tumor presents on the dorsum of the tongue, the mucosa is always firmly fixed to the growth. When, however, the sarcoma first appears on the under surface of the tongue, it is not unusual to find the mucosa freely movable over it, and in two cases it was paler than normal.

Ulceration of the surface is commonly seen, the more so of course in advanced cases or large growths. It does not often occur on the under surface, and when it does it is usually because the growth presses on the teeth. Foote noted ulceration on the side of the tumor where it pressed on the teeth. Altogether, note was made as to presence or absence of ulceration twenty-nine times. In eleven of these ulceration had occurred. The time at which ulceration occurs varies within wide limits. The case of Serafini referred to above had been growing twenty-two years; it was said, however, to have rapidly increased in size a short time before operation, and it was ulcerated. No statement is made as to the time at which ulceration first appeared in any of them. One had existed only two months, and was already ulcerated.[23] Seven of those ulcerated were round-cell, three of them were spindle-cell and one was a mixed-cell sarcoma. In one the tumor completely sloughed out,[24] so that "nothing remained to justify the diagnosis of sarcoma." It appeared later in the glands, however.

Glandular Involvement.—In view of the fact that sarcomas found in regions rich in lymphoid tissue often spread through the lymph-stream, and remembering the presence of lymphoid tissue in the tongue, it is important to know the frequency of glandular metastasis in sarcoma of the tongue. Altogether, the question as to gland involvement was answered thirty-seven times. In the others no mention of glands is made. In eighteen of the thirty-seven the glands were enlarged; just what glands we are not told, but presumably the regional glands.

In four of these cases no glandular enlargement was noticed until after operation, and the question arises in the reader's mind as to whether this enlargement was not simple inflammatory hyperplasia following absorption from the operation wound in the mouth. The subsequent history proves, however, that in two of them there was glandular metastasis; the third remains doubtful, while in the fourth the enlargement subsided spontaneously and was most likely not sarcomatous.

Of those enlarged before operation, fourteen in number, one is of doubtful character, inasmuch as the glandular enlargement had existed fifteen years, while the tongue condition had been present only three years. This patient was also designated scrofulous.[25]

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[13] These are reported by the following:
Targett: Guy's Hosp. Rep., 1890, p. 24.
Mandillon: Mém. et bull. Soc. de méd. de Bordeaux, 1888 (Fripp and Swan).
Poncet: Rev. de chir., 1897 (Fripp and Swan).

[14] Mickulicz and Michelson: Atlas der Krankh. des Mundes u. Rach. Berlin, 1892, No. 2, Plates 35 and 37.

[15] Schulten: Deutsch. Ztschr. f. Chir., xxxv, 417.

[16] Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p. 226. Murray: Ann. Surg., 1895, xxii, 271. Butlin, Knight: Lancet, London, March 26, 1887, p. 623.

[17] Lichtwitz: Arch. internat. de laryng., 1898 (Fripp and Swan).

[18] The six instances are as follows:
Melchoir, Robert: Rev. de chir., 1899, xvii, 546.
Mickulicz and Michelson: Atlas der Krankh. des Mundes u. Rach. Berlin, 1892, No. 2, Plates 35 and 37.
Mercier: Rev. méd. de la Suisse Rom., 1890 (Fripp and Swan).
Marion: Rev. de chir., 1897 (Fripp and Swan).
Lichtwitz: Arch. internat. de laryngol., 1898 (Fripp and Swan).
Downie: Brit. Med. Jour., 1899, ii, 1065.

[19] Marion: Rev. de chir., 1897 (Fripp and Swan).

[20] Mandillon: Mém. et bull. Soc. de méd. de Bordeaux, 1888 (Fripp and Swan).

[21] Poncet: Rev. de chir., 1897 (Fripp and Swan).

[22] Shambaugh: Am. Jour. Med. Sc., 1902, cxxiii, 115.

[23] Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p. 226.

[24] Keenan: Ann. Surg., 1904, xxxix, 956.

There are, therefore, thirteen with glandular involvement before operation, and two in which the glands were found to be involved after operation, a total of fifteen cases out of thirty-seven with undoubted glandular metastasis, or 40.5 per cent.

As to the time at which glandular involvement first appeared we have not sufficient data. In one instance the tumor was said to have been present in the tongue less than two months before the glands became involved.[1]

As to the kind of cell in the parent tumor with glandular metastasis, it is hard to make general deductions from the evidence at hand. In thirteen cases mention was made of the type of cell: of these, seven were round-cell, 53.8 per cent.; four were spindle-cell, 38.4 per cent., and two were of the mixed-cell type, 7.7 per cent.

It will be seen farther on that altogether there were twenty cases of round-cell sarcoma reported, and in these the regional lymphatic glands were involved seven times. Dare one say that round-cell sarcoma of the tongue spreads by way of the lymphatics in seven cases out of twenty — in 35 per cent. of the cases? We shall see also that there were in all sixteen cases of spindle-cell sarcoma. Four of these, or 25 per cent., metastasized by the lymph route. And of the mixed-cell type (round and spindle), there were six cases, two of which showed glandular involvement — 33⅓ per cent.

Cut Section.—The color on cut section varies. In both of mine on cut section the middle of the tumor was whitish and more pink-tinged toward the periphery. "Pinkish gray" is an expression often used to describe the color on section, but some have been red. The color varies with the vascularity of the growth. The spindle-cell growths are as a rule firmer and less vascular than the round-cell type. Pigmentation has not been noticed.

The growth may be firm (my Case 2) or fluctuant,[12] or its consistency may vary anywhere between these two extremes. One finds that both round-cell and spindle-cell growths have been fluctuant, and that tumors of both types have been punctured,[26] or incised[12] (mistaken for abscess or cyst?), so that the type of cell present cannot have much influence on the consistency of the tumor. On puncture or incision no fluid other than blood has escaped. Serious bleeding from the growth has occurred; in fact, one patient bled to death[27] from a recurrent round-cell sarcoma.

Correctly to classify the reported cases is, I am sure, quite impossible. The descriptions are in the main incomplete and the nomenclature used often conveys (to me) little idea of the histologic picture. Such expressions as "medullary cancer" and "plexiform sarcoma" may be quite right, but I do not understand them. In two instances the diagnosis is simply "sarcoma."

Abbe[28] reported a case of angiosarcoma, as did also Santesson.[25] Matrissimone's[29] case was a myxosarcoma, while Godlee's[30] case was a sarcoma of the gland of Nuhn and Blandin and called an adenosarcoma. Murray's[9] was an endothelioma. These I leave unclassified, not knowing whether to place them with sarcomas or not. The term "lymphosarcoma" is used frequently enough; believing that by so doing I simplify matters, I have classed all such with the round-cell sarcomas.

There were forty-nine cases in which the type of cell was noted. Of these twenty-two were round-cell. In only six of them, however, was reference made to the size of the cell, and these were of the small-cell variety. In forty-nine cases therefore of sarcoma of the tongue, 44.8 per cent. were round-cell.

The spindle-cell type was not so often encountered, there being only nineteen cases altogether, or 38.7 per cent.

There were eight cases in which both round and spindle cells were found — mixed-cell 16.3 per cent. In one of these in addition cartilage cells were present (my Case 1), and in the case of Godlee[30] referred to above, but not included in this class, was found "a calcifying nodule as large as a pisiform bone."

The growth is said to have been encapsulated or partly encapsulated in five of the cases. One of these was the case of Abbe, an angiosarcoma (?). Eve's[31] case was a mixed-cell sarcoma. A case of Butlin's[32] (Knight, Mr.) recorded as having a capsule was circumscribed but not encapsulated and consisted of small round cells. Downie's[12] case was a spindle-cell sarcoma, and as well as being encapsulated was pedunculated; that of Wiggin was a spindle-cell sarcoma, which had been growing in the posterior part of the tongue for seven years. It recurred in the scar very soon after operation, so there is no doubt as to the diagnosis.

Symptoms.—Usually the first symptom noticed by the patient is the feeling as though a foreign body were in or on the tongue,[24] and depending on whether the growth is in the anterior or posterior part of the tongue, the next is likely to be interference with speech or deglutition.[33] In two instances the patient first sought relief for "sore throat."[34]

Bleeding on mastication was the first sign in the cases of Marion[19] and Mickulicz.[14] These were both pedunculated growths. Bleeding may occur independently of mastication and may be very severe; in fact, in one case this was the cause of death.[27] Bleeding may occur without ulceration.[22]

Pain or soreness has been observed very often, pain more often. This is usually in the tongue at the site of growth and may occur only at intervals as in my cases. It may occur in the presence or absence of ulceration. In the absence of ulceration it may occur at intervals and be of a sharp, stabbing character. Soreness does not often occur without ulceration, but when this happens both soreness and pain may become constant. The pain may radiate to the ear of the same side.[35]

It may occur only on attempting to protrude the tongue or on taking food. It is sometimes so severe as entirely to prevent chewing or the swallowing of solids.[36] It has been known to disappear as the tumor grew larger.[24] A tickling and burning sensation accompanied the pain in the throat in the case of Schleinzer.[37]

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[25] Santesson: Virchow-Hirschi. Jahresb., i, 280.
[26] Butlin, Knight: Lancet, London, March 26, 1887, p. 623.
[27] Hutchinson: Tr. Med.-Chir. Soc., London, 1885, p. 311.
[28] Abbe: Ann. Surg., 1894, xx, 72.
[29] Matrissimone, abstracted by Pagenstecher: Centralbl. f. Chir., 1904, p. 604.
[30] Godlee: Lancet, London, March, 1887, p. 524.
[31] Eve: Tr. Path. Soc. London, 1886, p. 223.
[32] Butlin: Diseases of the Tongue, 1885, p. 259.
[33] Albert: Wien. med. Presse, 1885, p. 171. Shambaugh: Am. Jour. Med. Sc., 1902, cxxiii, 15. Fripp and Swan: Guy's Hosp. Rep., 1902, p. 88.
[34] Downie: Brit. Med. Jour., 1899, ii, 1065. Scheier: Berl. klin. Wchschr., 1892, p. 584.
[35] Murray: Ann. Surg., 1895, xxii, 271. Scheier: Berl. klin. Wchnschr., 1892, p. 584.

Difficult swallowing is a constant symptom when the tumor is in the base of the tongue, but it has also been noted when the growth was anteriorly situated.[38] The dysphagia is not always due to the pain, but the tumor may mechanically interfere with swallowing. This has been seen in growths beginning in the base or root of the tongue,[39] and in those involving the fauces or pharyngeal wall.[40] It was the first symptom in the case of Fripp and Swan.[1]

An accumulation of mucus in the back of the throat was an early sign in Shambaugh's case.[22] An increased expectoration was noted in the case of Schleinzer.[37] When for any reason swallowing is difficult or painful, drooling of saliva occurs.[35]

Dyspnea is common as a late symptom. It is most often found in those cases in which the tumor is situated far back in the tongue, but in Poncet's case the growth began in the under surface of the tongue; this, however, was a large tumor. A small growth in the tongue just in front of the epiglottis can early interfere with respiration.[22] In the case of Wiggin the patient was obliged to sleep sitting because of pharyngeal obstruction on each attempt at lying down.

Fetor ex ore has been noted twice.[41] In both cases ulceration was present. It will be found more marked in those who do not take trouble to keep the mouth and teeth clean.

Inability to close the mouth properly is seen in the case of large tumors.[21] In the case reported by Perkins the tumor during the past six months was said to have caused a habitual recurrent dislocation of both jaws on attempts at opening the mouth.

Protrusion of the tongue may be interfered with or totally prevented. This occurs when the growth, spreading through the root of the tongue, involves the floor of the mouth or the fauces and pharyngeal wall.[42]

A blister on the tongue where it had been bitten was the first sign in Dunham's case.[7] It persisted for three or four months and then grew hard and tumor-like.

In many of the cases loss of weight and anemia have been remarked. They have been present in cases without as in those with ulceration of the tumor, but I find that all so affected suffered with dysphagia.

Diagnosis.—The condition is a rare one and there is no macroscopic picture on which one may depend. Failure to make a diagnosis, however, will usually be due to failure to remember that there is such a thing as sarcoma of the tongue. It may be confused with inflammatory lesion or with other new growths. Of the inflammations, chronic interstitial glossitis, tuberculosis, lues, actinomycosis or chronic abscess are the most likely to lead to error.

Tuberculosis is generally seen as an ulcer at the side or tip on the dorsum of the tongue, but it may begin as a small lump or tumor, and if so might lead to the diagnosis of sarcoma. It is as a rule found only in those who have well-advanced tuberculosis of the lungs. It ulcerates early. The ulcer shows some tendency in places to heal or granulate, and this a sarcomatous ulcer ordinarily does not do. Still, a case is referred to above in which the whole sarcoma sloughed out, and "left nothing to justify the diagnosis of sarcoma."[24]

The luetic lesions likely to be mistaken for sarcoma are the chancre, the gumma and the diffuse infiltration. The chancre's ulcerated surface, generally raised up on an infiltrated base, reaches its maximum size in a couple of weeks, and ceases to grow. The ulcer precedes the tumor. The glandular enlargement occurs early and is usually very marked. Pain is not common nor is soreness. The appearance of secondary symptoms within six weeks is the rule.

A gumma grows rapidly. It is usually near the middle line and pain is absent. A yellowish or grayish spot soon appears in its center; it breaks and discharges a thick mucoid matter. The resulting ulcer is "punched out" or has undermined edges and its floor is covered with a grayish or yellowish membrane. It soon shows signs of healing.

Diffuse infiltration of lues sometimes attacks the tongue. It usually begins in the deeper parts of the tongue and early impairs the movement of the tongue. There is no tumor to be found and the tongue is only slightly increased in size. Pain is not common or severe and ulceration of the surface does not often occur. If the conditions have existed for long the surface of the tongue is bosselated, and painful fissures may develop in the sulci.

Actinomycosis usually presents signs of inflammation from the beginning; abscess formation with resulting sinus is the rule. Then ensues the diffuse and spreading infiltration with further sinus formation. Later, the granules are seen and the microscope makes the diagnosis easy.

With chronic abscess of the tongue I have had no experience, nor do I find more than a reference to it in the records consulted. Aspiration might be used to clear up the diagnosis.

The condition will hardly be mistaken for benign new growth. It is of far more serious import to the patient to mistake a benign growth for a sarcoma.

Benign growths develop slowly and rarely cause pain. Their outline is usually more clearly defined and they seldom, unless by their size, interfere with the mobility of the tongue. In some of the cases of sarcoma there is a history of the presence of a tumor for many years, but it is to be noticed that shortly previous to consultation the tumor had begun to grow rapidly. A papilloma may appear on the side or tip of the tongue and soon cause the patient to seek relief. Such a growth can be readily removed together with a small portion of the tongue substance, and then a microscopic examination of its point of attachment will reveal its true nature. The sarcomas infiltrate.

Macroglossia is present at birth. The tongue protrudes. Its whole anterior part is enlarged, and it seems edematous though it is often hard. The papillae are hypertrophied. Its rate of growth is slow.

Glandular cysts develop at the tip, along the sides and on the under surface. They may be of slow or rapid growth. They often alternately enlarge and diminish in size. Usually they are grayish and semi-translucent, as their content is most often retained inspissated mucus, which escapes on puncture.

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36. Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p.
226. Fisk: Ann. Surg., 1903, xxxvii, 273.
37. Schleinzer: Deutsch. Ztschr. f. Chir., 1911, cix, 283.
38. Perkins: Ann. Surg., 1896, xxiii, 585.
39. Albert: Wien. med. Presse, 1885, p. 171. Schulten: Deutsch.
Ztschr. f. Chir., xxxv, 417.
40. Scheier: Berl. klin. Wchnschr., 1892, p. 584.
41. Scheier: Berl. klin. Wchnschr., 1892, p. 584. Schleinzer: Deutsch.
Ztschr. f. Chir., 1911, cix, 283.
42. Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p.
226. Murray: Ann. Surg., 1895, xxii, 271.

The diagnosis of thyroglossal tumor has been made in a case of sarcoma.[43] The cyst or tumor growing from the remains of a thyroglossal duct is to be found in the median line and in the base of the tongue. It is painless and grows slowly, and until large interferes only slightly with tongue movement. Such tumors are to be removed when found, and at operation the discovery that the tumor is encapsulated will probably lead the surgeon to make a correct diagnosis before mutilation has been done.

Sarcoma of the tongue is not likely to be mistaken for a carcinoma, but if this should occur, the error is not a serious one, as the treatment is the same in either case. In the case of sarcoma a tumor appears which later ulcerates, while in carcinoma the ulcer, as a rule, is first noticed. A painful chronic indurated ulcer appearing at some point of irritation points to carcinoma; but it is well to remember that at least one sarcoma first appeared as an ulcerated spot in the scar of a scald.[10] In both we are likely to meet glandular enlargement, but this is more common in carcinoma.

After all clinical manifestations have been duly weighed, a diagnosis should not be made until one has excluded syphilis by both Wassermann test and antisyphilitic treatment. This causes a delay of from ten days to three weeks, but the benefits overbalance the dangers.

It used to be said that suspicious growths should be carefully watched. It should be urged that suspicious growths be promptly removed.

All efforts to make a diagnosis may fail until a section of the tumor is examined under the microscope. It is necessary to obtain the section from the edge of the growth that one may, if possible, see both sound and diseased tissue in the section. One must bear in mind that the removal of a section may lead to rapid fungation in the growth, as happened in the case of Barling.[44] Therefore no section should be removed until one is ready to do immediately whatever is indicated by the report of a competent pathologist.

Treatment and Prognosis.—The treatment has been operative in forty-six of the certain cases. In four no operation was done. In two no history is available, the specimens having been found in the museum of the Royal College of Surgeons.

Local removal only has been primarily done in twenty-five cases, two of these with division of the jaw (one of which lived four years without recurrence); three were removed with a V-shaped piece of the tongue (one of these was free from recurrence six years after, one two and one-half years after and one has been lost sight of).

Ten of the local excisions are noted as having recurred. In six others less than two years have elapsed since operation. Only three of the twenty-five patients are *known* to be well more than two years. Of the others there is no postoperative history.

The more radical operative treatment comprises (*a*) removal of one-half the tongue and (*b*) total removal of tongue and some adjacent part or parts.

There were twelve grouped in Class A. Of these, one had lived fourteen years,[12] one five years, and one three and one-half years without recurrence. Three others had lived less than one year without recurrence, to wit, two, nine and eleven months, respectively.

There were eleven cases in which removal of the tongue or more was done. Of these, four are free from recurrence after two and one-half, three, four and five years, respectively. One was well one year after operation. One was lost sight of, and three recurred in a year or less.

In the great majority of cases, the knife was used for the removal of the growth. In two instances it was followed by the actual cautery. One of these recurred in eight days; the other patient remained well two and one-half years afterward.

The electrocautery was used three times in excising the growth: one patient was well two years later, one well two weeks after and the other died soon of recurrence.

Coley's fluid was used before operation by Foote[45] without apparent benefit. It is still being used in my second case. Trypsin and holadin were used in Wiggin's case[43] and with seeming benefit for a while. Pyoktanin was also used in the case of Foote, but it seemed to make the condition worse.

The Roentgen ray was used after operation by Fisk,[46] but with what effect we are not told. It, too, is still being used in my second case. For the difficult respiration, tracheotomy may become necessary (Fripp and Swan).[1] The palliative treatment must be symptomatic.

In formulating my ideas of the prognosis I consider only the fifty cases in which the microscopic examination was made.

It may be conceded that left to itself, sarcoma of the tongue is a uniformly fatal disease. The length of time required by the disease to run its course when uninfluenced by treatment will be very difficult to foretell. In one case[23] death occurred about two months after the first appearance of the tumor. Naegele's patient died of pneumonia in a little more than three months.[3] In the other untreated cases recorded the patient was lost sight of or no mention is made of the final outcome.

Fripp and Swan,[1] in personal communication with the surgeons who had reported cases, were able to follow twenty-five cases in which operation had been performed. Eleven of the patients had lived without recurrence from six months to thirteen years. In thirteen of them there had been recurrence. Three of these "recurred in a short time" and four had remained well more than two years. In one of these four, recurrence appeared three, and in another three and one-half years after operation. In nine cases the recurrence was local only, and in one in the regional glands alone, while in four recurrence appeared both *in situ* and in the glands. These thirteen patients died of the recurrence.

Of patients with the round-cell type, only four out of thirteen remained well longer than three years. Of the spindle-cell variety only two out of twelve were free from recurrence after two years. One of these patients had been operated on four and the other eight years previously. Downie[47] informs me that in his case—spindle cell—the patient is well after fourteen years.

One expects the prognosis to be better after a primary operation than after an operation for recurrence, but one finds that this is not necessarily so. Schleinzer[37] reported one well five years after an operation for recurrence *in situ* and in the glands, and this in a round-cell sarcoma ("lymphosarcoma"!).

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[43] Wiggin: Am. Jour. Med. Sc., 1906, xlvii, 24.
[44] Barling: Brit. Med. Jour., 1897, i, 297.
[45] Foote: Am. Jour. Med. Sc., 1912, i, 198.
[46] Fisk: Ann. Surg., 1903, xxxvii, 273.
[47] Downie: Personal communication to the author.

As to metastasis through the blood-stream, there are three cases in which this seems to have occurred.[48] In one of these,[23] the whole course of the disease was only two months and in another eleven. Murray's[9] patient died in three years of metastasis in the brain. In the case of Beregszaiszy,[23] the peritoneum, mesentery and bowel wall were the seat of metastatic growths; in Keenan's[24] the stomach and peritoneum; while the skin was the site of metastasic deposit in a case of Butlin's.[32]

The direct cause of death may be exhaustion, pneumonia, sepsis or hemorrhage. I find no death occurring during the operation or immediately afterward. It is likely that a death attributed to sepsis, or pneumonia, or hemorrhage, occurring within eight days may be laid to the operation; one does not say so positively.

Recurrence has been noted up to three and a half years after operation.[49] I find no recurrence to have been delayed longer than this. Recurrence has been seen as early as eight days after operation,[40] and several recurred in two weeks.

The probability of recurrence after local excision is impossible to estimate from the case reports. Of eleven undergoing the intermediate operation (half the tongue with or without glands) four had been previously operated on by local excision, and in the nine requiring the most radical treatment only two were secondary operations.

There are certain cases reported in which the tumor was said to have been present for from six to twenty-two years.[50] In several of these the statement is made that the tumor had shortly before operation taken on rapid growth.

A fibroma that takes years for its development may show nearly the same microscopic picture as a spindle-cell sarcoma.[51]

CASE REPORTS

Case 1.—A. H., schoolboy, aged 14, Irish-American, comes because of lump growing in tip of tongue. Lump has been growing five or six months. History of having bitten tongue about two years ago. Has occasional darting pains in tongue and cannot speak as he used to. Has not lost weight, is well nourished and strong.

There is an irregularly oval lump in the tongue at its tip, slightly more on the right side than on the left. The lump is about ¾ inch long and about ½ inch wide at its middle; it projects both on the dorsal and under surfaces. It is whitish below and pinkish above. The papillae can be seen on the posterior but not on the anterior part of its upper surface. There is no ulceration. The mucous membrane above is fixed to the growth; that below is fixed to it anteriorly only. It is firm to the feel, resilient and irregular. One projecting boss in the lower anterior part is hard. No fluctuation. No glands feelable.

The diagnosis hung between new growth and implantation cyst and it was decided to remove it.

Under local anesthesia (novocain 0.5 per cent. infiltration in tongue on each side well back from tumor) a V-shaped portion of the tongue bearing the tumor was excised. The base of the part removed measured 1½ inches and from middle of base to apex measured 1⅜ inches. Through-and-through interrupted silkworm-gut stitches about 1 cm. apart had been placed before the incisions were made and these when tightened controlled the bleeding and closed the wound.

There was very little shock.

Liquid diet was allowed and talking forbidden.

Union was by first intention and the last stitch was removed on the ninth day.

Cut in two, the tumor was solid throughout with a sharply limited edge. In its anterior part was a nodule about 1 cm. in diameter which was semitranslucent, somewhat opalescent, and harder than the adjacent tissue. The scraped surface yielded a whitish mucoid substance.

The specimen was sent for microscopic examination and the report came back that the growth appeared to be sarcomatous and contained round and spindle cells and that a part of it contained cartilage cells.

The patient returned no more after the stitches were removed and inquiry showed that a false address had been given. Nothing further has been heard of him by me.

Case 2.—L. D., 19, male, Italian-American, student. Lump in tongue, began to grow two and one-half or three months ago; has a drawing feeling and occasional sticking pain not very severe. Bit the tongue eight years ago at site of growth. Growth has always been hard. Had not interfered with movement of the tongue, nor with speech up to three weeks ago. It was then removed but is now growing again. The patient now has a slight lisp. Sections were made from growth removed and a diagnosis of sarcoma was made. A glance at the slides (brought along) showed an infiltrating growth made up of spindle and round cells, the former predominating.

The growth in tongue is situated ¾ inch back from the tip and is just to the left of the median line. It is pinkish and the surface is raised rounded above the level of the dorsum about ¼ inch and on its summit is a small puckered scar; the growth is about the size of an ordinary marble. It is fixed in the substance of the tongue, is regular of surface, spherical in form and has a resilient feel. There is slight tenderness. This the patient attributes to the recent operation. There is nothing in the history to arouse suspicion of syphilis, and the Wassermann is negative.

The growth was removed in August, 1913. The cheek was split as far as the masseter on the affected side. The root of the tongue was transfixed and a silver wire carried through and tied (twisting) as far behind the foramen cecum as possible. (I do not think this wire did any good whatever; it was recommended as a preventive of bleeding.) The rest of the technic followed Whitehead's procedure for the removal of half the tongue except that one had to go well to the right of the median line and the lateral incision was directed obliquely backward as I believed by so doing I should secure a better approximation, and I did. There was bleeding from the right lingual (ranine), but the left was caught before being cut. Not more than an ounce or two of blood was lost altogether. Not so much would have been lost but that it was deemed advisable to remove a little more from the right side opposite where the growth had been, necessitating a third cut. When the silkworm-gut stiches were drawn tight all the bleeding was well controlled. Healing was by first intention.

Microscopic examinations showed an infiltrating growth, composed of round (small) and spindle cells.

The use of Coley's fluid was begun in the first week and is still continued. Massive dosage of the Roentgen ray was advised and the patient still receives one treatment per month. He writes me that he speaks with a lisp only when he gets excited. He has recently gained 11 pounds in weight and says he feels perfectly well.

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[48] Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p. 226. Keenan: Ann. Surg., 1904, xxxix, 956. Murray: Ann. Surg., 1895, xxii, 271.

[49] Fripp and Swan.

[50] Heath: Tr. Path. Soc. London, 1869, xx, 157. Hutchinson: Tr. Med.-Chir. Soc. London, 1885, p. 311. Abbe: Ann. Surg., 1894, xx, 72. Perkins: Ann. Surg., 1896, xxiii, 595.

[51] In addition to the references already given, the following will be found of interest:

Cheatle: Med. Press and Circular, 1906, ii, 14.
Fiedler: Ztschr. f. Med., Chir. u. Geburtsh., 1864, new series, iii, 305.
Huter: Berl. klin. Wchnschr., 1869, xxxii, 346.
Michael: Handb. d. Laryngol. u. Rhinol., 1899, ii, 634.
McBurney: Med. Rec., New York, 1893, xliii, 439.
Stern: Deutsch. med. Wchnschr., 1892, p. 495.

THE EXPERIMENTAL EFFECT OF THE COLON BACILLUS ON THE KIDNEY *

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The following experiments were undertaken without any preformulated theories and with no attempt to prove anything. My previous work on the colon bacillus stimulated a desire to know more about this organism in its pathogenic rôle within the kidney.

This work is represented by one hundred animal experiments wherein a comparative action between the colon bacillus, the typhoid bacillus and the staphylococcus is shown under different conditions, and these bacterial invasions compared with the effect of a soluble toxin made from each.

In the first series 1 c.c. of a twenty-four-hour bouillon culture of various strains of colon bacilli was injected into one ureter just below the pelvis. These infected kidneys were removed at varying intervals along with the opposite kidneys. Most of the injections were made without producing any obstruction in the ureter, and some with obstruction by either narrowing with a ligature or a small pebble placed within the lumen.

As has been so often shown, the obstructed ureters produced the typical pathology of a pyonephrosis, varying in extent in direct proportion to the extent of the obstruction. The picture produced by the simple injection was consistent in each case, showing a glomerular nephritis. The cellular infiltration was of the polynuclear type in the infected organ, and mononuclear in the opposite one. In some areas there were interstitial hemorrhages, but no extensive involvement of the tubules was found in any instance. No focal necrosis or miliary abscesses, and in no instance in which the kidney remained for longer than twenty-four hours could bacteria be demonstrated in the tissue or by culture from the urine. No specimen showed a limitation of the pathologic condition to the pelvis even as soon as twenty-four hours after the injection, but each picture was that of a pyelonephritis, with the glomeruli the seat of the inflammation. The opposite kidney in every instance showed a similar change, but much less pronounced. In those cases in which the opposite kidney remained *in situ* for some time after the removal of the infected one, a complete restoration to normal is shown. This fact is borne out clinically very frequently. A surgical kidney on one side will produce a toxic nephritis in the opposite organ, which recovers spontaneously on removal of the seat of the infection. That it is a toxic condition is shown in some of the subsequent experiments.

The typhoid bacillus produced a more generalized parenchymatous nephritis, which was emphasized by obstructing the lumen of the ureter, but did not produce a pyonephrotic change. The opposite kidney showed similar changes. Blood-cultures and urine-cultures were positive in each instance.

The staphylococcus produced either focal necrosis or a complete pyonephrosis. Cultures from the urine were positive; from the blood negative.

The next step was the injection of cultures of these three organisms, singly, into the sheath of the ureter, extraperitoneally, at about its middle third; and in another group of animals subcapsularly at the cortex. The histologic pictures were practically the same as when the organisms were introduced through the ureter. The typhoid bacillus produced a general parenchymatous nephritis; the staphylococcus focal necrosis, with inflammatory processes throughout the kidney. The colon bacillus still showed the glomerulitis predominating, and, in addition, when the injection was made at the cortex, a pyelitis secondary to a nephritis. Blood-culture was positive for typhoid, urine-cultures positive for staphylococcus and typhoid.

In the next series of experiments soluble toxins in varying strengths were made from the three organisms and injected at the locations just described. The histologic picture changed somewhat. The typhoid toxin showed an intense parenchymatous involvement, with areas of granular degeneration. The opposite kidney was involved to about as great an extent. The staphylococcus toxin gave a similar picture, but not nearly so marked. The colon toxin gave a very pronounced picture of a generalized parenchymatous nephritis. The type of cellular infiltration with each toxin changed from the polymorphonuclear to the lymphocytic, a rather significant change. The opposite kidneys were involved equally as much, and all became normal from three to four weeks following the injection of the toxin. When too great a concentration of the toxin was used, the animals died very promptly. No attempt was made to ascertain very accurately the minimum lethal dose.

If any conclusions are to be drawn from this work, three facts stand out prominently:

1. A non-traumatized kidney in the absence of ureteral obstruction will overcome spontaneously the invasion of virulent micro-organisms.
2. It appears that our recently slighted blood-stream is the means of extension of these infections from the pelvis to the cortex, from the cortex to the pelvis, and in all probability from the periureteral tissue to the renal parenchyma. This is based on the fact that the glomeruli are the structures mostly involved. Though, in the face of the recent very interesting work of Hess,[1] later verified by Eisendrath, whose specimen showed a predilection for the lymph-tract as the route for ascending infections, my renal specimens show only the glomeruli involved.
3. The pathologic changes are due to a direct toxic action and the soluble toxins of the organisms are carried to the opposite kidney, where a similar picture is seen.

In no instance does any specimen show the changes found by Hess, who asserts that cultures of colon injected into the pelvis will produce pus foci and areas of necrosis within from thirty-six to forty-eight hours, and if the bacteria act longer the changes become more marked. The very convincing work of Francke[2] leads one to believe that the colon bacilli pass from the mesenteric lymphatics into the right kidney, seldom into the left, yet left-sided pyelitis is almost as frequent as right, and if we are to ascribe to gastrointestinal disturbances the rôle for the production of colon bacillus pyelitis, then the blood-stream must be at least as important as the lymph-stream in carrying the bacteria to the kidney.

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[1] Hess: Deutsch. med. Wchnschr., 1912, No. 30; Mitt. a. d. Grenzgeb. Med. u. Chir., 1912, No. 26, p. 135.

[2] Francke: Arch. f. Anat. u. Physiol., 1910, p. 191; Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1911, xxii, 623; Berl. klin. Wchnschr., 1911, p. 1973.

Most of the experimental work done along this line has been with narrowed or completely obstructed ureters, which, of course, gives an exaggerated pathologic picture. My object was not to imitate a clinical state, but to ascertain how far the kidney could overcome a simple bacterial invasion, since we see so often a bacteriuria without any clinical manifestation.

Mueller[3] concludes that a pelvic infection spreads to the cortex along the lymphatic channels upward, but all of his experiments were performed after first obstructing the ureter. Kumita[4] has traced the lymphatic capillaries in the cortex, where he says they communicate with the lymphatics of the capsule and surround in a most intimate manner all the convoluted tubules. The meshes of this network are circular and surround in a parallel manner the blood capillaries. From the capillaries, lymphatic vessels arise which surround Bowman's capsule and penetrate the glomeruli. This finding confirms the work of Mueller, although it does not prove that infections in non-obstructed ureters extend along the lymph-channels. All of my specimens show the glomeruli the seat of the cellular infiltration, rarely any interstitial or tubular involvement. This, of course, speaks for a blood-stream extension. One would expect to find thrombi or emboli in hematogenous infections, yet none could be demonstrated. If the extension were urogenous, that is, along the secretory current, the entire epithelial lining of the corresponding tubules, from the papillae to the point to which the inflammatory process has ascended, would show a corresponding damage, which certainly has not been seen in any of the specimens.

In justification of my conclusions, so widely differing from such reliable observers, whose work has been quoted, it must be remembered that this piece of work was not begun to prove any clinical picture or trace the origin of any pathologic process. The technic employed, therefore, differs markedly from that of other experimenters along this line, and the results necessarily are different.

My sincere appreciations are due Dr. James W. Jobling and Dr. Edwin Kirk for their many valuable suggestions.[5]

TECHNIC

Preparation of Bacterial Cultures.—Pure cultures of colon bacilli isolated from the human and rabbit feces. Also stock cultures used. Quantity injected, 1 c.c. of twenty-four, forty-eight and seventy-two-hour bouillon cultures. *Staphylococcus pyogenes albus* and typhoid bacillus obtained from stock culture. Same quantity used.

Preparation of Toxins.—The toxins were made by washing off in normal salt solution a twenty-four-hour agar-slant. This was allowed to stand twenty-four hours. Toluene added to kill the bacteria, which required from twenty-four to forty-eight hours; this toluene then pipetted off. They were then centrifuged and the supernatant solution (the soluble toxin) pipetted off and stored in the ice-box until used.

Preparation of Tissues.—Cut tissues immediately fixed in Zenker's solution and in 10 per cent. liquor formaldehydi. All embedded in paraffin.

Stains Used.—Hematoxylin eosin; Unna's eosin methylene blue; Loeffler's methylene blue and Gram stain for bacteria in the tissue; carmin for fibrin.

Urine cultures made from bladder. Blood-cultures made from renal vein or heart, if at necropsy. Cultures from urine and blood made in bouillon.

Operative Technic.—Twenty-five rabbits and seventy-five dogs used. Anesthetic, ether. Typical lumbar incision. Great care was taken not to traumatize either the kidney or surrounding structures. Whenever possible, the injections were made without tearing the organ from its fascial and fatty bed. Injections into the periureteral tissue were all made extraperitoneally. The kidneys were removed from one to thirty days following injections.

ABSTRACT OF DISCUSSION

Dr. Louis E. Schmidt, Chicago: Work of this kind brings out a great many clinical observations. When we know work of this kind to be true, naturally our clinical point of view may differ from what it was from the former facts at our command. When a disease condition, obstruction and infection, exist on one side it is well worth our while to study the opposite kidney; there can be no question that the toxemic action on the opposite kidney is just as important as in the kidney in which the disease really exists. In the experimental work which Dr. Koll has done, of which the details are not given, how long after the beginning of obstruction and infection were the kidneys removed? From the clinical point of view when we have a renal stone possibly obstructing the lower end of the ureter, how long are we permitted to wait before we consider operative interference on that side and before the so-called sound side becomes involved? That is a matter of great importance. There is no question that all of us see patients with ureteral stone that we do not operate on because the stone is at apparent rest and there is practically no infection present, but we must take into consideration the condition that exists on the other side. Naturally, from the circumstance that there are more infections on the right side, we could wait longer on the left side than on the right. Furthermore, the question of bacteriuria exists. That question is still under discussion. It is often stated that bacteriuria arising from the kidney cannot exist unless there are changes in the renal epithelium; that in individuals suffering from tuberculosis there are tubercle bacilli found in the urine without any renal changes. That is doubted more and more at present. It is believed that the intoxication has caused changes in the kidney which permit this condition to exist. I am under the impression that the colon bacillus, which is the one we most frequently deal with in bacteriuria, produces some changes which permit this condition to exist. I have yet to see cases of renal bacteriuria which clear up without any treatment. I have seen prostatic cases clear up from time to time. They would be macroscopically clear one week and the next week they would show the typical characteristics of bacteriuria. Another important point, clinically, is that we should always take notes of cases, for instance, of chronic appendicitis that exist for long periods of time, in which the condition is not acute but the patient has pains in the right lower quadrant. This condition undoubtedly produces some obstructive condition, and naturally infection can easily occur, and in that way may produce renal conditions similar to those described in the paper.

Dr. H. W. Plaggemeyer, Detroit: One case has bothered me a great deal of late, and I want to ask Dr. Koll what he thinks about it. This patient gives no history of pain, but the phthalein on the right side was merely a trace at the end of thirty minutes. On the left side there was 16 per cent. in the first fifteen minutes and 7 per cent. in the second fifteen minutes, making a total of 22 per cent. The blood urea was 0.2 per cent., the urinary urea on the right side was 0.7 per cent., and on the left side 0.8 per cent. by the Marshall test. On the right side there was a profuse colon infection in the urine and also on the left side. What would Dr. Koll think about operating in a case like that with a distinctly low phthalein on the opposite side?

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[3] Mueller: Arch. f. klin. Chir., 1912, xcvii, 44.

[4] Kumita: Arch. f. Anat. u. phys. Anat. 1909.

[5] In addition to the references already cited, the following will be found of interest:
Asch: Mitt. Centralbl. f. d. Krank. d. Harnorg. u. Sexualorg., 1902, xiii, 690.
Bauereisen: Ztschr. f. Gynäk u. Urol., ii, No. 5.
Schnitzler and Savor: Fortschr. d. Median, 1894, No. 23.
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Venus: Centralbl. f. d. Grenzgeb. d. Med. u. Chir., Sept. 16, 1911.
Cuturi: Ann. d. mal d. org. genito-urin., xxix, 514.
Brewer, G. F.: The Present State of Our Knowledge of Acute Renal Infections, The Journal, A. M. A., July 15, 1911, p. 179.
Koll: Tr. Am. Urol. Assn., 1911; ibid., 1912.

Dr. A. J. Crowell, Charlotte, N. C.: Some five or six years ago I prepared a paper on the rationale of traumatic nephritis. I had no proof except clinical proof that such was the case but this was really positive of a right-side nephritis following severe traumatism to the left kidney. In Dr. Koll's experimental work I think I see further proof that such a condition can occur. He speaks of the removal of an injured or diseased kidney preventing a diseased condition of the opposite kidney. Dr. Squires and I have lately been doing some experimental work on traumatizing the kidney and injecting the various fresh bacteria, but we are not yet ready to make any report further than the macroscopic appearance. We have operated on about fifty rabbits up to the present, traumatizing the kidney with and without injecting various bacteria into the veins thereafter. I hope, later, to make a report of this work. Macroscopically, the traumatized kidney followed with intravenous bacterial injections, with the exception of a few cases, showed but little of interest.

Dr. I. S. Koll, Chicago: One big mistake that experimenters frequently make is to lay down the laboratory findings as a dogmatic control of clinical findings. There is a long range between the test-tube and the patient, and I am convinced that while our experimental work may pave the way for our clinical deductions, nevertheless we must be careful in applying laboratory findings to clinical manifestations. Now, as to the length of time that it is safe to allow a stone or an infection to remain before urging operative interference, the point is an arbitrary one, because if a calculus is obstructing either the pelvis or the ureter, in the absence of infection, of course, the kidney is not going to be destroyed as rapidly as if there was an infection. How long before the kidney will be infected when there is obstruction to the ureter also cannot be foretold. The infection in the kidneys removed in my experimental work varied from twenty-four hours to four weeks. I found that within twenty-four hours after the injection of colon bacilli into an obstructed ureter there were very marked changes in that kidney. In some instances in which there was a high degree of virulence of the organism there was a marked tendency to total destruction of the kidney in twenty-four hours. In the absence of obstruction—and by obstruction we must consider that due to edema or inflammation of the ureter, because that certainly is an obstruction—I was not able in twenty-four hours to recover the organism in the urine taken from the bladder. This widely differs from the work of other experimenters, but I tried it over and over. I was careful not to bring the kidney up out of its bed. I went into the ureter and injected my organism extraperitoneally, and thereby produced less traumatism. In those cases I could not recover the organism after twenty-four hours. I do not believe there is a bacteriuria without renal changes. Within twenty-four hours there is a distinct nephritis. I do not believe that a pyelitis exists as a pathologic entity. In twenty-four hours the glomeruli show changes, but of course the changes are more marked in the pelvis. Answering Dr. Plaggemeyer's question concerning the involvement of both kidneys, if he found involvement indicated by the low phthalein output, the question is, What is the type? By a toxic condition in the opposite kidney I mean that there is no infection, but the toxins are producing an irritation of the parenchyma that is manifested, not by pus-cells in the urine, but by casts, albumin and red corpuscles in more or less abundance. So I should say that if in one kidney he found practically no pus cells present and that great quantities of pus were in the opposite side, that is certainly a case for operation. The toxic condition is manifested not by leukocytes but by hyaline and granular casts, by albumin and by erythrocytes.

EXPOSURE OF APPENDIX BY CULLEN'S METHOD

A SIMPLE WAY OF REMOVING AN ADHERENT RETROCECAL APPENDIX THROUGH THE ORDINARY GRIDIRON INCISION

WILLIAM NEILL, Jr., M.D.
Resident Surgeon, Church Home and Infirmary
BALTIMORE

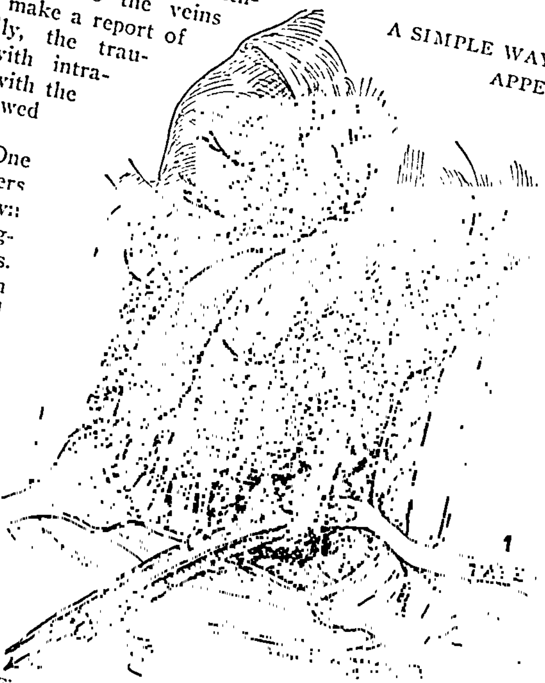

Fig. 1.—Pushing a blunt Kelly forceps through the meso-appendix at the cecum.

For at least seven or eight years Dr. Thomas Cullen, one of the attending surgeons at the Church Home and Infirmary, has been employing such a simple and easy device for exposing retrocecal and densely adherent appendices that I feel its general adoption would not only shorten the time taken in these operations, but also render the surgeon's work much easier.

One of the most important points for the operator to decide when commencing an appendix operation is what kind of an incision to make. In those cases in which the abdominal pains are rather vague, it is usually wiser to make a right rectus incision, as either the gall-bladder or appendix or both may be diseased. With the right rectus incision it is possible to lengthen the wound upward or downward as may be desired. In this manner the entire field can be most satisfactorily exposed.

Again, when a gangrenous appendix is suspected, a right rectus incision may be made and if drainage be necessary then a small gridiron incision can be made near the anterior superior spine just where the drain is to be inserted directly down to the cecum.

It is not my desire to discuss the general subject of appendix incisions but to refer to the method Cullen and those associated with him have found eminently satisfactory in those cases in which the diagnosis of appendicitis was relatively certain and the pain localized to the appendix region—those cases in which one would naturally make a gridiron incision. Not infrequently in these cases after the incision has been made it is next to impossible to expose the appendix, as it is retrocecal and often adherent. In such cases partial exposure may finally be obtained after placing and replacing the retractors several times, but in other cases it will be necessary to cut across some of the abdominal muscles to obtain adequate exposure.

In nearly every case the base of the appendix can be located by following the longitudinal band on the cecum. When once this is located a Kelly blunt forceps is pushed through the meso-appendix at this point and grasps a piece of tape as indicated in Figure 1. The two ends of the tape are then grasped in the tip of the forceps and used as a tractor. Strong traction is exerted without any injury either to the cecum or to the appendix. The traction invariably brings up from three-fourths to an inch of the appendix. Another Kelly forceps is passed through the meso-appendix and grasps a second piece of tape, as shown in Figure 2. The second tape is now used as a tractor and a further portion of the appendix exposed. A third forceps is pushed through the meso-appendix and a loop of tape passed around the appendix, as indicated in Figure 3. Traction on this third loop will usually expose the tip of the appendix. The meso-appendix is now clamped off from tip to base, as indicated by the arrows in Figure 4. Sometimes only two tapes are necessary. As the meso-appendix is cut, the tapes are loosened and removed. They lie outside of the abdomen and with care there is no danger of their being lost. We have never experienced any trouble from this source.

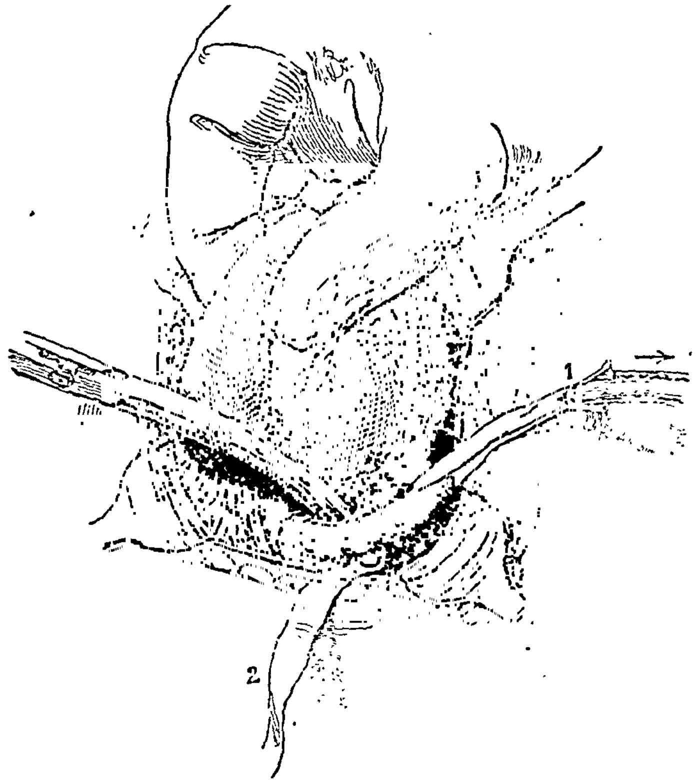

Fig. 2.—Traction on the base of the appendix, bringing more of the appendix into view.

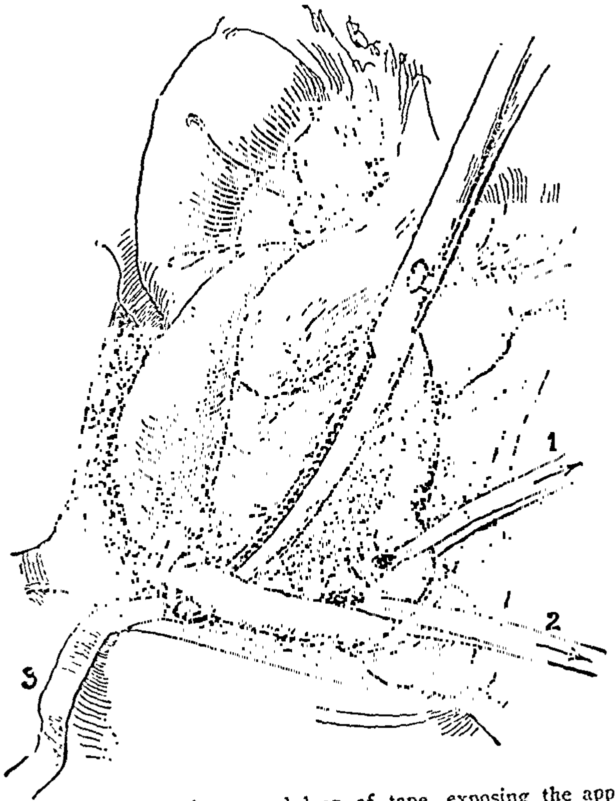

Fig. 3.—Traction on the second loop of tape, exposing the appendix near its tip.

By using this method almost any subacute or chronic retrocecal and adherent appendix can be delivered with ease, and an otherwise difficult and tedious operation rendered a simple one. Various members of the resident staff of the hospital have employed this method of exposure of the appendix with much satisfaction and in no instance have we seen the cecum or appendix injured by the traction with the tape.

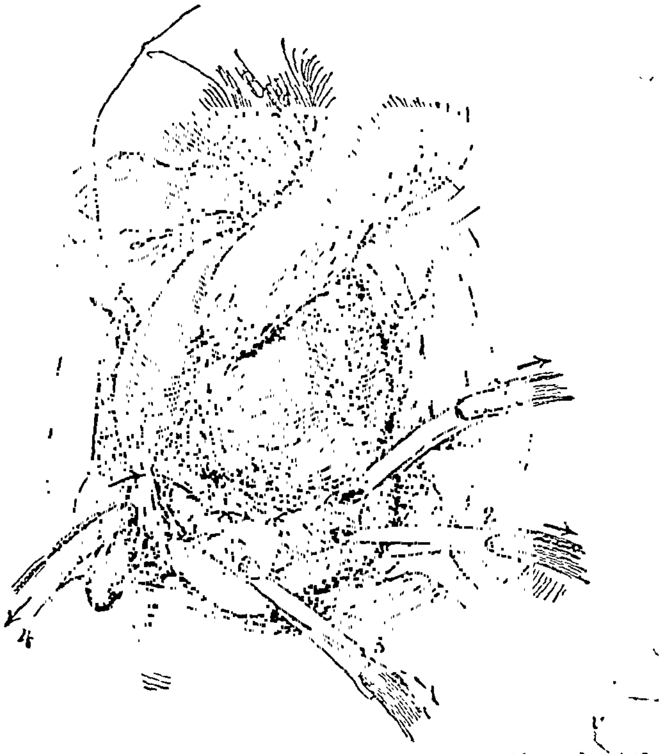

Fig. 4.—The meso-appendix is clamped on its cecal side and cut as indicated by the arrows. Note that the tapes produce an equable and broad traction and that they do not injure the appendix. By this method a long, adherent retrocecal appendix can be removed readily through an ordinary gridiron incision.

The subsequent steps in the removal of the appendix have naturally varied, depending on the method best suited to the individual case.

I wish to express my sincere thanks to Mr. Max Brödel, director of the Department of Art in Medicine of the Johns Hopkins Medical School, for the graphic illustrations portraying the various steps in the procedure herein described.

Sleep as a Habit.—From the psychological point of view, remember that sleep is, above all, a habit. Sleep is one of the rhythms of our existence, and in the lower animals these are more accurately observed than with us; it is only civilized and thinking man who interferes with this the most sacred of the rhythms of Nature.—H. Crichton Miller, *Medical Press and Circular.*

THE USE OF PITUITARY EXTRACT AS A COAGULANT IN THE SURGERY OF THE NOSE AND THROAT

HARRY KAHN, M.D.

AND

L. E. GORDON, M.D.

CHICAGO

The rhinologist has long sought a harmless, efficient drug that will control the hemorrhage during and following operations on the nose and throat. Calcium salts have been used with indifferent success. Blood-serums have given reliable results, but have the disadvantage that anaphylaxis may be produced. Epinephrin only produces its results on the mucous membranes, and then only when directly applied.

Citelli[1] reported to the Seventeenth International Medical Congress in London, August, 1913, on the use of pituitary extract for the control of hemorrhage following turbinectomy, sinus operations and tonsillectomy. Following his suggestion, we have used the drug with universally good results. The blood loss during and after turbinectomies was slight; in fact, the operation itself was almost bloodless. The hemorrhage following curettements of the ethmoids was also much reduced. The blood loss following the tonsil operation was greatly lessened. The snare, Sluder and Beck methods were used for the tonsil enucleation. Not a single untoward result have we had in over one hundred patients operated on which could be attributed to the drug.

The action of this drug as a blood-stilling agent did not seem to us to be wholly explained by the action on the walls of the blood-vessels, as is assumed by most writers, hence we were constrained to look further, and found that the coagulation time was reduced to from one-third to one-half or more after the hypodermatic administration of pituitary extract.

We also made a study of the blood-pressure before and after the administration of the drug. This was done in the hope that we might add something to the knowledge of the blood-pressure of children in normal health, and also to study the effect of the drug on the blood-pressure. The systolic and the diastolic pressures were taken before and after the administration by the auscultation method, a mercury sphygmomanometer of Stanton, with the modified cuff for children, as suggested by Gerstley. A brief summary of our results follows:

Our cases, with the exception of three, were children aged from 4 to 12 years, to whom 12 minims of the drug were given hypodermatically. The influence on the coagulability of the blood was profound. It was reduced from one-third to one-half. In some cases a greater reduction was noted. For instance, in one case the coagulation time was four minutes before the drug was given, and after its administration, only one minute was required for the clot to form. Another was reduced from three and one-half minutes to forty-five seconds, and still another from two minutes and twenty seconds to thirty seconds, etc.

The results of our observations of the blood-pressures are noted below under conclusions.

TECHNIC OF ADMINISTRATION

Pituitary extract (Parke, Davis and Company) was administered hypodermatically in the dose of 12 minims to children and 15 minims to adults, not less than fifteen minutes before the intended anesthetic. The coagulation time was taken before and again after the fifteen-minute interval. The blood-pressures were taken at the same intervals. The coagulation time was determined in the early cases with the Brodie and Russell[2] coagulometer, and the remainder of the cases by the drop-on-the-slide method.

CONCLUSIONS

1. The coagulation time of the blood is materially reduced by the hypodermic administration of pituitary extract.

2. The hemorrhage following nasal and throat operations is much reduced, especially operations on the turbinals.

3. The effect on the blood-pressure of children i variable, as follows: Systolic pressure was increased in 55.31 per cent. of the cases, reduced in 36 per cent. and unchanged in 8.5 per cent. Diastolic pressure was increased in 35.5 per cent. of the cases; reduced in 35.5 per cent., and there was no change in 29 per cent. Pulse-pressure was increased in 61 per cent. and decreased in 39 per cent. of the cases.

30 North Michigan Avenue—32 North State Street.

OPERATIONS FOR CLEFTS OF THE HARD AND SOFT PALATE *

LINN EMERSON, M.D.

ORANGE, N. J.

A large percentage of these patients are not seen in early infancy by the operator, as the parents do not appreciate the importance of early operation. The parents of a child with cleft palate should be told by the family physician that, if not operated on before the fifth year, the child will never have clear speech no matter how good the cosmetic result, as the child will not be able to enunciate clearly if the operation is performed at a later date.

The Brophy operation should be performed before the end of the third month and Brophy himself operates as early as the second or third week. The technic, as described by Carmody in a recent paper is the following:

The patient having been anesthetized, preferably on the operating table, is placed in a semi-Trendelenburg position thus avoiding aspiration of blood. The lip is raised and with the special, heavy, curved needle a heavy silk suture is carried through the lower part of the maxillary bone behind the malar process, so that the end will show above the palate process, when it appears at the inner border. Care should be exercised to avoid injury to the teeth by working the needle between them if possible. The silk is caught with the tenaculum hook and the needle withdrawn. A needle with the curve in the opposite direction is used in the same manner from the opposite side, leaving silk with closed loops facing each other. The needle is then carried through in the same manner in front of the malar process from both sides, and on the longer side an extra loop farther forward. By looping one loop through the other, as first used by

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[1] Citelli: Ztschr. f. Laryngol. u. Rhinol., 1913, vi, 523.

[2] Brodie and Russell: Jour. Physiol., 1897, xxi, 403.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

Mason, and withdrawing the surrounding loop, we have one double silk strand from one buccal surface to the other. These are replaced by drawing through, by means of this silk, a double silver wire.

On these wires are threaded lead plates, and it is important that the holes should be the right distance apart, so as not to cause buckling of the plates if at too great a distance, and so that the wires will not cut the tissue if too close together. Personally it seems that not enough care is taken in making the holes in these plates, as portions of lead if left, although soft, will irritate the tissues. For this purpose, the ordinary rubber-dam punch of the dentist is used, which leaves a clean-cut hole with smooth surface on the side placed next to the tissues.

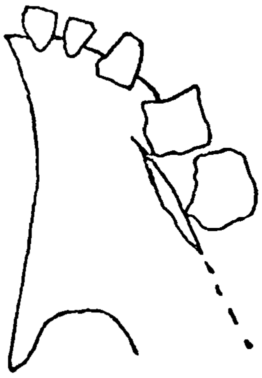

Fig. 1.—(From Owen) showing lateral incision.

The wires are then twisted together, one of the posterior with one of the anterior, care being taken that the same wires are twisted on each side. This will bring the parts together with comparative ease if the patient is not too old, or the cleft is not too wide. If the patient is over 3 months old, this operation should not be performed unless the cleft is very narrow. If the cleft is wide in the younger child, I have at times found it necessary to sever the malar process from the maxilla, as recommended by Brophy. This will allow easier approximation.

The palatal process of the maxilla, and horizontal portions of the palate approach each other so that they are almost in contact. The edges should be freshened, being careful to cut completely through the mucous membrane and periosteum; the wires should be tightened, thus bringing the parts in close contact, and completely stopping hemorrhage.

If the premaxilla is protruding, it is best to force it backward into normal position at the same time, not by simply drawing it back, thus causing a bending of the septum which produces obstruction of one nasal passage, or, as is the habit of some operators, simply to make an incision in the septum, and slip one part of the cartilage past the other, which will produce a thick septum, partially or completely blocking one or both nasal passages.

My method, while not entirely original, is to remove a wedge-shaped piece, base down, subperiosteally from the septum, thus avoiding injury to the nerves and blood-vessels; the space from which this is removed is obliterated by forcing back the premaxilla, leaving a septum smooth on both sides. It is necessary to freshen the edges of the premaxilla, and also the maxilla, in the same way as in the case of a single cleft.

The mortality in the early months of life in the hands of the occasional operator, has caused me to give up the early operation altogether. If complicated by harelip, I usually repair the lip during the first few months, and close the palate some time during the second year.

Of all the literature I have consulted, the monograph of Owen is the most valuable. His ideas have been followed mainly in my work. I desire to give full credit for quotations and illustrations.

The operation considered and here described will be that for uncomplicated cleft of the hard and soft palate: the instruments recommended by Owen were used, with one or two exceptions. The Whitehead mouth gag is very satisfactory. The extension piece to the tongue depressor, should be removed for use with children, as it is too long, and crowds the base of the tongue over the laryngeal opening. The two curved steel raspatories, angular scissors, wire-twisting forceps, long mouse-toothed forceps, scalpel, artery forceps (for sponges), Sim's hollow needle, tenaculum, and Graefe cataract knife, complete the list of instruments required.

The patient should be liberally fed during the week preceding operation, and should have the rectum and lower bowel well cleared out by enemas just before operation. This permits withholding everything, even water, by mouth, for seventy-two hours following the operation.

The chloroform can best be given with a Junker inhaler, but this is not absolutely necessary as a skilful anesthetist can keep the case well in hand with a gauze sponge on a convenient carrier.

As the operation is a tedious and back-breaking procedure, the position of the patient is of considerable importance. Owen recommends the head hanging over the end of the table, conceding, however, its interference with the respiration. The Trendelenburg position is more satisfactory, but the legs, when flexed over the end of the table, should be protected by having the table covered with several thicknesses of blanket to prevent injury from pressure during the necessarily long operation. This position will bring the head of the child of 5 at about the middle of the table, waist high, thus enabling the operator to vary his position from time to time. If he becomes wearied by standing, he can work with equal ease and comfort sitting on a moderately high stool.

The blood accumulates in the vault of the pharynx and is easily removed by stick sponges. While an ordinary portable electric light affords a suitable illumination, it multiplies the number of assistants and interferes with the operator's view of the small field of operation; therefore, the electric photophore is much to be preferred.

Before the introduction of the mouth gag a heavy silk suture is passed through the tongue. This is tied tightly across the lower bar of the gag after its introduction and serves to prevent the tongue from falling back into the throat.

The first step is the denudation of the margins of the cleft, and epinephrin is first used for the purpose of reducing the hemorrhage to a minimum.

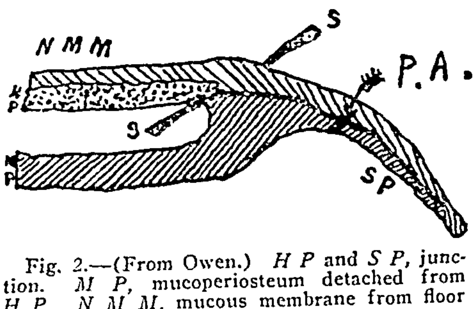

Fig. 2.—(From Owen.) *H P* and *S P*, junction. *M P*, mucoperiosteum detached from *H P*. *N M M*, mucous membrane from floor of nares. *S S*, blades of scissors to cut through aponeurosis of membrane.

Instead of denuding deeply and cutting the periosteum from the margins of the bony cleft, thus removing a part of the tissue which should be left to form the flaps, only a *thin shaving* of the mucous membrane should be removed from the edge, but great care should be observed that the margins are denuded through their entire extent. Owen recommends the use of a blunt bistoury, but in my experience there is nothing that equals a Graefe cataract knife. Its keen, narrow blade ensures rapid and perfect denudation and, under suitable illumination, there is no danger of doing damage with its sharp point.

The next step is a radical departure from Brophy's procedure. While in his skilled hands the dissection of the periosteum from the hard palate with his curved periostomes working outward beneath the denuded margins, is no doubt possible, I feel sure that in most inexperienced hands it would result, as it did in mine, in the tearing of the mucoperiosteal flaps.

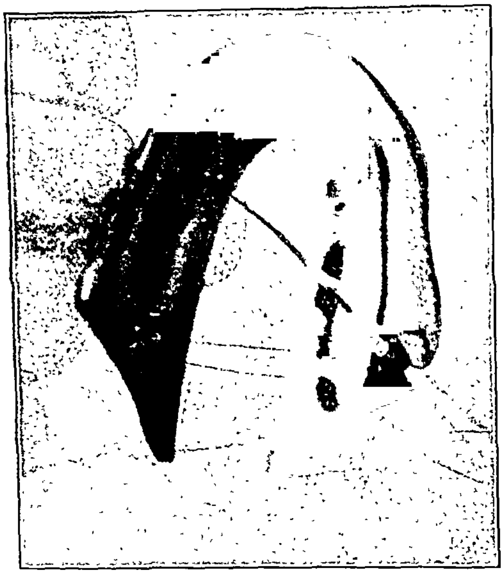

Fig. 3.—Showing manner of passing suture with hollow needle.

Figure 1 (from Owen) shows the location of the lateral incisions and they can be made longer than is shown in the figure if necessary.

The closer these incisions are made to the teeth the less the chances of wounding the larger branches of the descending palatine arteries, the broader will be the flaps, and the less likelihood of their blood-supply becoming impaired.

The incisions pass through the mucoperiosteum down to the bone.

With a raspatory of moderate curve introduced through these lateral incisions the mucoperiosteum is readily detached from the hard palate until the end of the instrument appears at the margin of the cleft. An instrument whose curve is more nearly a right angle is then introduced in an outward direction, and by their alternate use the mucoperiosteum is completely detached.

At this time considerable hemorrhage is encountered which is controlled by pressure and the use of epinephrin. The blood is removed from the pharynx by small absorbent cotton sponges carried on Halsted artery clamps or suitable sponge holders.

Figure 2, from Owen, shows the operation up to this point, and the firm connection between the posterior margin of the hard palate and the velum. This is severed by the introduction of a pair of scissors curved on the flat and on the complete severance of this attachment will depend the success of the operation.

When properly severed the mucoperiosteum and the velum hang loose and are easily approximated to the corresponding flap of the opposite side.

Even when this has been done the most difficult part of the operation is yet to follow, namely, the introduction of the sutures. Undue stretching and laceration of the flaps are liable to occur when the old-fashioned curved needle is used and the flaps necessarily held by a pair of forceps.

The introduction of the tubular mechanical needle by Owen was a great saving of time, but its use, even as he describes it, makes it necessary to grasp the flaps with forceps and considerable traction ensues when the needle is withdrawn. In its use, as I shall describe it, the time required to introduce the sutures is reduced by more than one-half and the flaps do not have to be grasped by forceps. Thus bruising and laceration of them is obviated. Owen lays great stress on having an assistant to look after the needle to see that the end of the wire is just inside the tip of the needle ready for emergence when the wheel is turned after the needle has been passed.

It has not been my good fortune to secure such an assistant, and the rapidity with which the sutures can be introduced by the method I am about to describe leads me to keep the needle in my own hand and manipulate it myself. It goes without saying that a mechanical needle of this sort, to be of value, must be a perfect instrument. After having had three instruments submitted to me by various instrument makers, all of which were unsatisfactory, I induced Meyrowitz to send to Weiss, of London, for the needle here shown. I have found it almost a marvel of perfection. The mechanism is very simple and I have never known it to balk or fail. Meyrowitz has since made such a needle using mine as a model.

The advantage of putting the stitches in from before backward is that the posterior ones being put in last leaves the operator free to sponge the blood from the pharynx at frequent intervals without pulling on the stitches or palate.

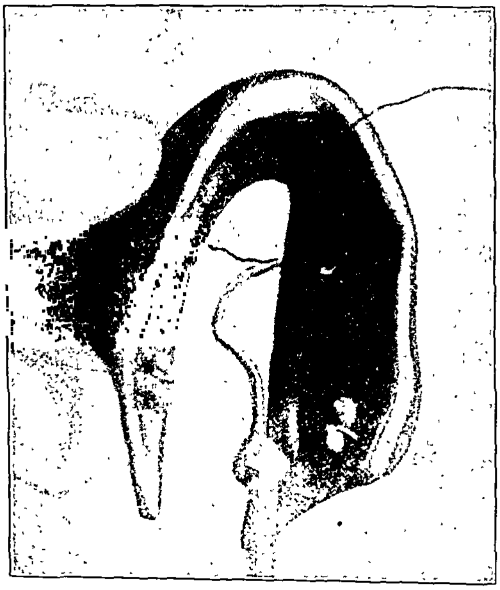

Fig. 4.—Also showing manner of passing sutures with hollow needle.

If the posterior stitches are put in first they are liable to become caught and torn out by the frequent sponging.

In introducing the needle from the oral side of the flap, as is usually done, it is necessary to pull the flaps downward, and even when held by forceps considerable difficulty is encountered on account of the small space in which one must work. The procedure recommended is the following:

The needle is entered between the flaps into the nasal cavity, rotated to one side and the point pushed through the flap from above downward, the point entering the flap on its upper surface and emerging on the inferior or oral surface.

(Fig. 3 indicates its position.) As soon as the point emerges, the milled wheel is turned and about 12 inches of the silver wire extruded from its point. The reason for extrusion of such a long piece will be noted as the description proceeds.

If difficulty is experienced in forcing the needle through the flap a pair of forceps, or, better still, the long curved scissors can be pressed against the oral surface of the flap.

The blades of the scissors are slightly separated at their points and through the separation, the point of the needle emerges. The needle is now withdrawn and the point rotated through 150 degrees in the nasal cavity and passed through the opposite flap in exactly the same manner. (Fig. 4 indicates its position.)

It will be noticed that the wire which projects from the end of the needle is folded back on the outer side of the needle in its passage through the second flap and forms an angular loop at the tip of the needle. This loop is increased in size by the extrusion of two or three inches of wire. The wire is then cut off and the needle removed.

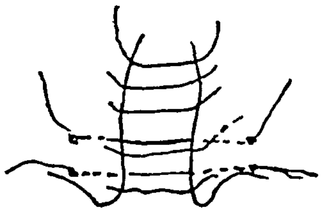

Fig. 5.—Showing sutures inserted.

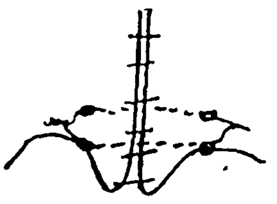

Fig. 6.—Showing sutures tied.

The reason for the long end on the opposite side now becomes manifest. Close to the under surface of the second flap is the kink in the wire made by its being folded back. If this kink is left near the flap, the wire is almost sure to break when it is twisted to tighten the suture. The short end of the wire is now seized and gently pulled out until each projecting end is about 8 inches long. This fine wire pulls through the flaps with perfect ease and no traction or cutting out ensues. The two ends of the wire are grasped by an artery clamp and passed to the anesthetist or an assistant. Thus from seven to ten sutures are inserted, passing from before backward.

Before putting in the last two sutures which hold the uvula, two sutures are passed far out from the median line to prevent the tensor palati from pulling and tearing out the stitches in the soft palate and uvula.

These are shown in Figures 5 and 6. (Also in Figs. 3 and 4.) Instead of being united across the roof of the mouth, as are the other sutures, to prevent their tearing out, they are shotted and their short ends twisted together, as shown in Figure 6. Thus, even should the shot come off, there would still be a loop over the bridge of tissue and little probability of their cutting out.

The after-care of a case requires a nurse of considerable tact and skill. In children, if struggling and crying follows attempts to use the antiseptic spray, it is best to omit it. If possible, absolutely nothing should be given by mouth for seventy-two hours, conversation should be inhibited as much as possible, and children entertained in every conceivable way. Nutritive enemas alternating with large amounts of saline solution passed high into the bowel will maintain the strength and allay thirst.

ABSTRACT OF DISCUSSION

Dr. G. Hudson Makuen, Philadelphia: Dr. Emerson has given a good description of a well-known operation for cleft palate. It has its limitations, as all operations on the palate have. Its chief limitation is that it leaves a velum that is too small and tense to perform what has been called its valvular function in respiration, phonation and articulation. Every operation on the palate fails in this respect, because even though a full quota of tissue may be present there must always be some cicatricial contraction in the line of union between the lateral halves. The Brophy operation, however, although a more extensive and serious one, does give us a more useful soft palate. I have seen some of his cases in which the soft palate very nearly fulfilled its normal valvular function. Dr. Brophy has recently made an addition to his operation. In those cases in which tissue seems to be lacking, he enlarges the velum by means of flaps from the posterior pillars, thus making a longer soft palate. As Dr. Emerson says, the operation should be done before the habits of speech have been formed. No operation on the adult palate can change or improve the speech to any great extent; it can only make it possible for the patient to learn how to speak better. It is a difficult proposition to change the habits of one's speech. We all have our speech habits and we cannot change them offhand. The patient with a cleft palate has characteristic habits of speech, which have become, in adult life, a fixed part of his psychical as well as his physical equipment, and they cannot be changed by merely changing the physical properties of the peripheral mechanisms of speech, but only by careful speech training, in which not only new muscles are brought into action but changes are made also in the auditory and other speech centers of the brain. This is an important matter in connection with cleft-palate operations in adults and even in children of 6 or 8 years of age. As I have said elsewhere, I think I can take a patient with a cleft palate and do more for his speech by psychophysical training than can be done by an operation without training. This, however, is not an argument against the operation, but only a plea for the training which must follow it, and I may add that the necessity for the training increases with the increase in the age of the patient at the time of operation.

Dr. T. E. Carmody, Denver: In speaking of the operation for cleft palate, I will take issue with Dr. Makuen, because I have had some cases in which operation late in life has been satisfactory and the patients have obtained a very satisfactory enunciation. However, my practice is to do all the operating I possibly can, and usually it is possible before the fifteenth month—before the child begins to talk—and better habits of speech are then formed. I reported in a recent article a patient operated on, a young woman of 19 years, who had been associated with a nurse for some time, and who left the city and on coming back four months later and calling the nurse up on the telephone asked her to guess who was talking and she could not. So her habits of speech could not have been bad. I have tried Dr. Emerson's lateral incision with good results, but generally it is not necessary, as we usually have enough tissue. I have seen something like 400 cases of my own and with Dr. Brophy and others, and have only seen one case in which there was lack of development. There is only lack of union. Very frequently a flap of nasal mucosa can be used either from the nasal side of the palatal plate or from the septum, and in one case I have used a flap from the inferior turbinate. I think the lateral incisions interfere with the action of the soft palate, because a flap is obtained that is not pliable, and the velum will not act as it should. Dr. Emerson has given some good methods for the after-care of these patients.

Dr. Oscar Wilkinson, Washington, D. C.: I have used some aluminum plates which are left in for two or three weeks.

Dr. Linn Emerson, Orange, N. J.: As to Dr. Carmody's remarks regarding the lateral incisions not being necessary, that I concede, but the operation which I have reported is done with a view of shortening the procedure. While it used to take me two hours, I can now frequently do it in forty-five minutes. With the use of the Graefe knife and the elevator one can strip it up in two or three minutes, whereas by the other procedure it takes a long time and one is much more liable to tear the flap. As to taking tissue from the turbinate, that can be done, but the disadvantage is that this tissue is so thin that the stitches pull out, and the blood-supply is so poor that necrosis or non-union ensues. As Dr. Carmody has shown, if the flap is loosened enough this tissue is not needed. Another point is to put the sutures in far back instead of too close to the edge. In my first operation I operated four times before I got closure; now it is rare that I have to operate more than once. There is no question of the merit of the Brophy operation, but most of my cases are in older patients. As to the mortality of the early operations: of course the younger the child the higher the mortality. These patients have a low index and since this paper was written I have lost two—one thirteen months old and one eighteen months old. Necropsy failed to show the cause of death. Both died the next day after operation with high fever, 105-6. It is possible that the anesthesia had something to do with it. In the next operation I do I shall use gas and oxygen. Relative to the improvement of speech, I have one patient on whom I operated at 11 years. He came daily for several months for training and Dr. Makuen well lays stress on the importance of that. He now has almost no noticeable impairment of speech.

SO-CALLED CONGENITAL SCOLIOSIS

WITH SPECIMEN, INCLUDING THE THORAX *

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CHICAGO

Mery in 1700 published the first case report of congenital scoliosis. Fleischman in 1810 and Meckel in 1816 were the first to assert that this deformity could exist without other defects; this was established by Mührig in 1829, Rokitansky in 1844, Hohl in 1850, and Förster in 1854.

Recently cases of congenital scoliosis are much more frequently seen and reported by orthopedists. The obstetrician of extensive practice may say he has never seen a case. If so, it is very likely that cases have gone unnoticed because regular or careful examination of the back was neglected. The pediatrician sees children at a period when this deformity is more readily discovered, and is in a position to call attention to it even before the child is sitting. However, many cases are overlooked, or if seen we neglect to attach sufficient importance to the condition, and in this way the number of reported congenital scolioses are less than they should be.

On the other hand, the number of so-called congenital scolioses, which Dr. Lovett[1] has so properly called scoliosis due to a congenital bony defect, are being described frequently, since the congenital defect, even in the adult, and the dried skeleton, tells the story and shows the etiology.

Thus, in considering the etiology of congenital scoliosis we should discard those cases which are the direct result of bony congenital defects. It is well known that such anomalies as numerical variation of the vertebrae, insertion of a wedge of bone in the column, cervical rib, bifurcated rib, absence of a rib, extra rib, Sprengel's deformity, etc., lead to scoliosis. Should we not regard as rightly belonging in the category of congenital scoliosis those cases having another origin than arrested or perverted *bony* development? If so, we have left for consideration the following theories:

1. Heredity.
2. Intra-uterine pressure.
3. Intra-uterine injury.
4. Intra-uterine paralysis.
5. Intra-uterine rickets.
6. Intra-uterine anomalies of muscles.

In considering the hereditary factor, we should be careful to distinguish between congenital and acquired characters. Histories of cases of scoliosis show that frequently other members of the family on the father's or mother's side also suffered this type of deformity. Hereditary congenital lateral curvature, however, should not be confounded with a scoliosis appearing after birth and following, for instance, congenital rickets, which easily could have prevailed in the family of the patient and that of the patient's forefathers because of innutrition and insanitary conditions existing through generations. It seems that such cases are fairly to be regarded as products of the environment, and not congenital in the true sense. The theory of intra-uterine injury calls for no comment, and "intra-uterine pressure" is at best a vague term which seems to be used at present to cover those cases for which no other explanation is at hand. Paralysis *in utero*, if combined with faulty position and uneven muscle pull which would favor scoliosis, is granted to produce it just as in paralysis after birth.

Following a suggestion of Prof. Basil C. H. Harvey, I have been impressed with the fact that the length, insertion and uneven attachment of muscles probably gives a key to the etiology of many of those cases which have no recognized cause.

Professor Harvey kindly permitted me to take the following data from his manuscript notes:

> In 1906 he has noted that in one cadaver the "left trapezius muscle extended from the occipital bone and the spinous processes of the cervical vertebrae to the clavicle and the spine of the scapula. The lower fibers extended from the spines of the fifth and sixth cervical vertebrae and corresponding supraspinous ligaments to the vertebral margin of the scapula above the spine. This muscle on the left side was absent in the thoracic region."

The following cadavers, representing a small series noted consecutively, indicated that the attachment of the trapezius is eccentric in half of this small number; it extended down to:

The twelfth dorsal vertebra on the right and twelfth on left (Case 10).

The twelfth dorsal vertebra on the right and twelfth on left (Case 11).

The twelfth dorsal vertebra on the right and twelfth on left (Case 12).

The eleventh dorsal vertebra on the right and eleventh on left (Case 13).

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Lovett: Lateral Curvature of the Spine and Round Shoulder, Ed. 2, p. 94.

The tenth dorsal vertebra on the right and eleventh on left (Case 14).

The tenth dorsal vertebra on the right and twelfth on left (Case 15).

That is, the tabulation shows that the trapezius in Cadaver 14 is attached to the tenth dorsal vertebra on the right and to the eleventh dorsal vertebra on the left side, and in the fifteenth cadaver to the tenth on the right and the twelfth on the left. In the cadaver noted in 1906 there is no attachment whatever in the thoracic region on the left side. I have also found in the literature one case of congenital scoliosis showing the entire absence of the trapezius on one side.

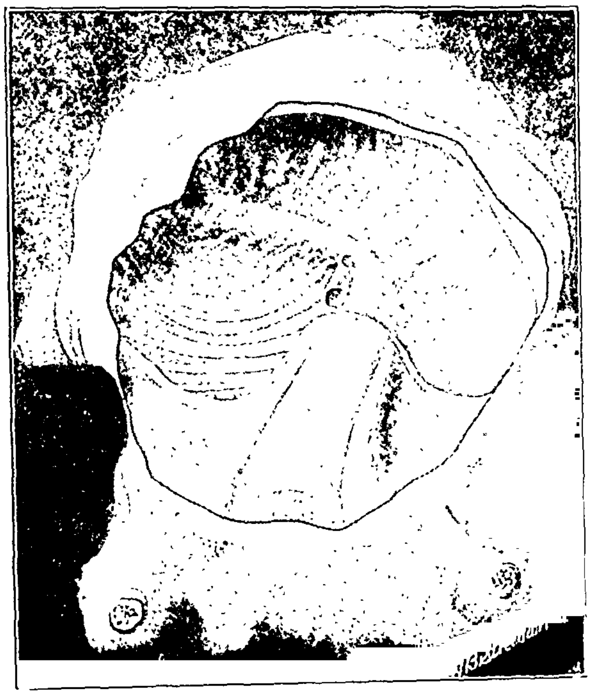

Fig. 1.—The enlarged left thorax and the contracted right thorax are well shown in the drawing.

In another small series among the same notes there is shown some variation in the length of the latissimus dorsi on the right and left side. This muscle extends up to:

The fourth dorsal vertebra on the right and fifth on left (Case 10).

The seventh dorsal vertera on the right and seventh on left (Case 11).

The seventh dorsal vertebra on the right and seventh on left (Case 12).

The sixth dorsal vertebra on the right and fifth on left (Case 13).

The sixth dorsal vertebra on the right and sixth on left (Case 14).

The sixth dorsal vertebra on the right and sixth on left (Case 15).

The question of the frequent occurrence of uneven muscle attachment because of inequality in length of two opposing muscles is borne out by the majority of dissections, making the asymmetry of muscle groups almost the rule.[2]

Such anomalies must be considered as cause for beginning asymmetry, congenital and acquired, whose exaggeration by position would produce scoliosis. On the other hand, there are cases of scoliosis whose dissected back muscles show no anomalies; one case found on the dissecting table later revealed tuberculosis as the cause. However, it cannot be contended that all subjects with anomalies of muscle length or attachment necessarily have scoliosis.

Yet it is reasonable to allow that such facts as the tabulations presented show should justify a theory based on such anomalies of muscle group as is here mentioned. These considerations indeed raise the question whether there are any cases of congenital scoliosis in any other sense than that the deformity is induced by some organic anomaly giving rise to an inclination to deformity.

So far as I know, the theory that scoliosis may originate from an asymmetrical attachment of muscles has not been advanced. I have presented it at some detail here because I think it ought to have a place in the consideration of the general etiology of cases of this class. As a matter of fact, the case which I am to present is not of this class, but one due to bony defect of the vertebrae and of the ribs.

REPORT OF CASE

History.—M. G., a girl, aged 5 weeks, entered the Cook County Hospital in 1913. The parents complained of inability on the part of the child to nurse because of a deformity of the lips. The labor was normal at nine months. The father, mother and her three sisters are all living and normal in every respect; the only other child in the family is normal. The young, healthy-looking mother never had a miscarriage. Venereal history negative. Examination showed a child poorly nourished and badly deformed by congenital defects. There was double harelip and cleft palate; absence of the globes of the eyes, and right lumbar, left dorsal scoliosis, rigid and with rotation. Several operations for harelip and cleft palate were performed. The child was in the hospital for about fifty days and died of pneumonia.

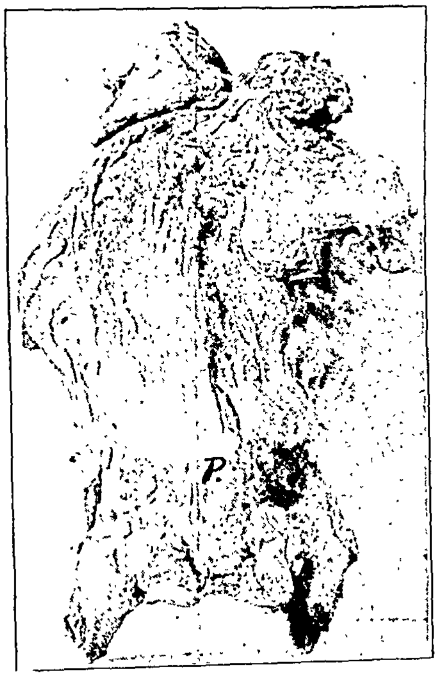

Fig. 2.—Back of specimen, showing the left rotation and bulging, the low right and high twisted left scapula.

The Scoliosis.—The deformity of the spinal column was marked not only when the child lay in the crib, but also when she was held up by the arms and head with stretching of the back which would have straightened a flexible curve (Fig. 1). Palpation of the ends of the spinous processes in the living child revealed a long curve in the dorsal-lumbar region, which was to the left. Rotation bulging of the left posterior ribs was markedly evident even when the shoulders and the head were on the stretch, and this rotation increased when the body was flexed. The left anterior chest wall was prominent, the right side concave. The crests of the ilia were uneven; the left shoulder was much higher than the right, and the scapula on the left side was elevated in a way to suggest Sprengel's deformity, having its position in regard to the right scapula, thorax and clavicle, raised, and its inner border turned toward the spine.

The Specimen: The Back: When the skin was removed and the muscles exposed, the rotation on the left side of the thorax and the extreme elevation of the left scapula attracted attention by their deforming effect. The spaces between the ribs on the left side are much larger than on the right side, and the angles formed with the vertebra and sternum are unlike on the left and right side. Taking a common point on the spine as *P* (Fig. 2), and measuring to the inferior angle of the left scapula, gives a distance of 5 inches, while the distance from the same point to the inferior angle of the right scapula is only 3 inches. Measuring from the same point to the left, to the most distant point on the eighth rib is 4 12/16 inches, while to the right, to the eighth rib it is only 3 8/16 inches.

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[2] Poirier and Charpy: Traité d'anatomie humaine, ii, 496: "Asymmetry is almost the rule; usually one of the trapezius muscles descends lower than the other" (L'asymetrie est presque la règle; ordinairement, l'un des deux trapèzes descend plus bas que l'autre.)

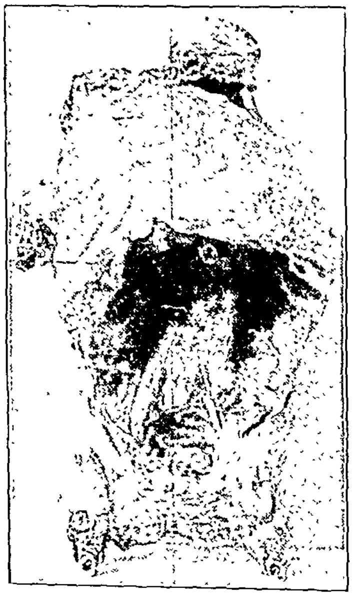

Fig. 3.—Anterior view of specimen, showing the slanting direction of the sternum; the twisted, leaning thorax; dipping of lower line of thorax on right side as compared with the lower edge of the left thorax. Note that the left shoulder girdle is nearer a line drawn to the pelvis parallel to the table than are the cervical vertebrae.

The Anterior View of the Body.—The anterior-superior spines of the ilia are not parallel to the surface of the table on which the specimen was placed (Fig. 3), the right trochanter and ilium are higher than the left, and the spinal column is seen to incline to the left, beginning at the pelvis and extending to the eleventh dorsal vertebra before it bends to the right. The thorax is inclined to the right, slightly rotated in the same direction. The wide spaces between the ribs on the left side and the narrow spaces on the right side are plainly seen from this view. The left shoulder is much higher than the sternoclavicular joint.

The Roentgenogram.—This was taken from the specimen by Drs. Harting and Hubney. It shows the entire pelvis tilted to the left; even the heads and necks of the femur show this tilting. The curve is seen to be a long total curve to the left beginning with the last lumbar and including the entire column, having its apex at a point represented by the tenth, eleventh and twelfth dorsal vertebrae.

The Vertebrae.—There are six lumbar vertebrae apparently normal in all respects, judged from information obtained from the roentgenogram. The dorsal vertebrae are shot to pieces, not one of them appearing to be entirely normal. The right halves of most of them seem defective and show the mechanical cause for the scoliosis. The eleventh and tenth present only the left half of the vertebrae, as do the eighth and second, while the remaining show all grades of incomplete bifurcated portions of the right side of the vertebrae.

The Ribs.—The ribs on the left side are twelve in number and appear fairly normal in shape and size. The various angles they make with the vertebrae vary considerably and the attachments are irregular and not normal, in most instances on account of partial absence or changed inclination of the vertebrae. On the right side of the thorax there are eleven ribs only, the twelfth being fused with the eleventh, both of which are attached to the tenth. Each is narrow and irregular, with faulty attachment ends, and all are crowded together, diminishing markedly the capacity of the chest.

Clavicle.—The right clavicle shows a marked twist.

Dimensions.—The following measurements will give an idea of the comparative dimensions of the left and right sides of the thorax:

Measurement from the sternoclavicular notch to the junction of the fourth rib with its cartilage (Fig. 3): left, 5 6/16 inches; right, 2 15/16. Measurement on the circumference between a point on the sternum at the junction of the fourth rib and a given spinous process: left, 5 5/16 inches; right, 4 13/16 inches. Measurement to determine depth of thorax was taken by pushing a probe through the anterior chest at a point between the fourth and fifth ribs at the junction of the rib and its cartilage and pushing the probe through on the left side to the convexity of the curve and on the right side to the concavity of the curve (Fig. 3): left, 2 8/16 inches; right, 2 10/16 inches.

Further description of the bony framework will be given when the specimen is dissected and the skeleton cleaned up, which is deferred in order to allow those who are interested in the case to examine the thorax closely before farther mutilation.

31 North State Street.

ABSTRACT OF DISCUSSION

Dr. Roland Meisenbach, Buffalo, N. Y.: Those of us who are constantly working with scoliotic cases in children and seeing the roentgenograms of the cases must be impressed with the fact that the anomalies in the bones are not so great as one would generally suppose, as compared with the musculature of the child and the curve of the spine. As the child grows older, the bones, especially the bodies of the vertebrae, become malformed. The irregular muscular development, I believe, occurs very early in some cases, and is induced in others, and is a very important factor in the etiology of scoliosis.

Dr. Reginald H. Sayre, New York: These congenital cases of scoliosis must be more frequent than we have generally been led to believe. I have seen, I am certain, half a dozen that I can remember at present, and in those that have occurred since the days of the Roentgen rays, it happens that all had skeletal abnormalities. I know that these are congenital cases, because I saw them within a few weeks of birth, and the deformity was very marked at that time. Some have fused ribs; some, absence of ribs; some, extra vertebrae, or V-shaped vertebrae; and one, a marked distortion of the pelvis, which was very much warped and twisted. The deformities of the pelvis do not attract our attention so much as they should in connection with the prognosis whether these patients should or should not get married. I have at present under my care a girl whose father is a doctor. He is really worried, not so much about the shape of her thorax as about that of her pelvis; and he wants to know whether treatment will correct that, so that she can get married. That is the point that the obstetricians think of, but that the orthopedists do not think of so much in looking after these cases.

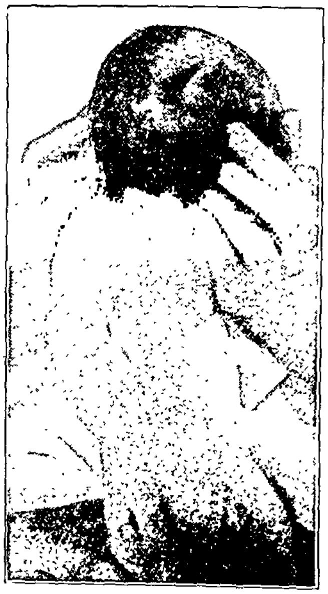

Fig. 4.—A photograph taken at about 3 weeks of age. The child died of pneumonia when 3 months old. Traction is being made above by the nurse as she holds the shoulders and head, and below by the doctor who is stretching the left leg. The left dorsal curve and the rotation deformity are well shown.

On Style.—Every man will read a book with more pleasure or even with more ease, if it is written in fairer characters. Therefore every man will also listen more readily to what is spoken, if it is signified by appropriate and becoming words. —*Epictetus.*

FRACTURES OF BOTH BONES OF THE LEG*

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PROVIDENCE, R. I.

Since writing a paper last year which included this fracture, but without going into the details very much, I have had a number of inquiries regarding them which gave the incentive to elaborate the subject somewhat.

In the first place, just as in cutting operations, as these fractures keep coming, a proper technic should be developed, and the Roentgen-ray part should be the same in practically all of them. Each fracture is a definite mechanical problem and the only way to get exact knowledge of the problem is to have roentgenograms in at least two, and sometimes more, views. Then it is possible in a fracture of both bones of the leg to know how the fragments are placed, how much riding by, etc., and from this knowledge to map out exactly what moves are necessary, not only to reduce but also to get an end-to-end position, if it can possibly be done. If at first there is some swelling, the leg may be placed in a pillow splint with elevation, when it hould rapidly disappear. This splint also prevents undue motion which might irritate the tissues as well as cause some pain. For the setting, the patient should be under an anesthetic for complete muscular relaxation. The mechanics for the reduction must be precise, must really accomplish what is desired and must hold the bones accurately end to end while (in my own cases) plaster of Paris is properly applied and set.

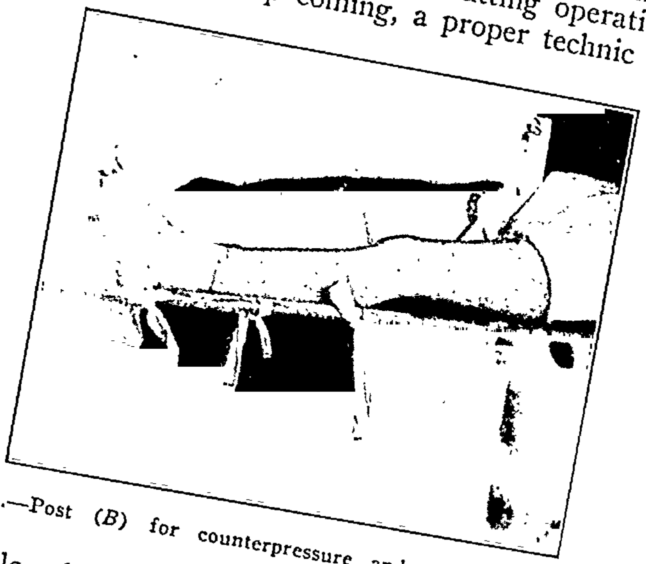

Fig. 1.—Post (*B*) for counterpressure and the foot and ankle bandaged.

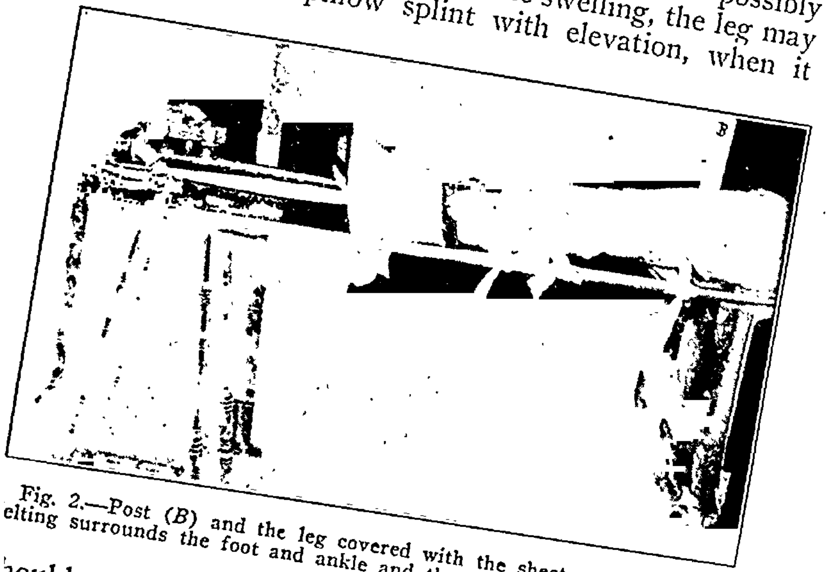

Fig. 2.—Post (*B*) and the leg covered with the sheet wadding. The elting surrounds the foot and ankle and the traction is applied.

The mechanism which thus far has served me well consists of a Bradford frame with an upright or bar for counterpressure against the perineum (Fig. 1), and a windlass arrangement at the opposite end to make traction on the leg (Fig. 2). After the patient is in position, the foot and ankle are bandaged with a cotton bandage to prevent swelling (Fig. 1), and then the foot and leg are covered with sheet wadding, preparatory for the plaster of Paris (Fig. 2). About the foot and ankle is placed full thickness gray felting, and over this the webbing is arranged and attached to the windlass for traction (Fig. 2). The windlass is made in two sections so that the foot on the well leg may be attached and pulled on separately, thus preventing the pulling around of the pelvis and interfering with firm traction on the affected side. Cross-bands of cotton bandages are put in two or three places, one of them being directly under the fracture, thus supporting the leg (Figs. 1, 2 and 3).

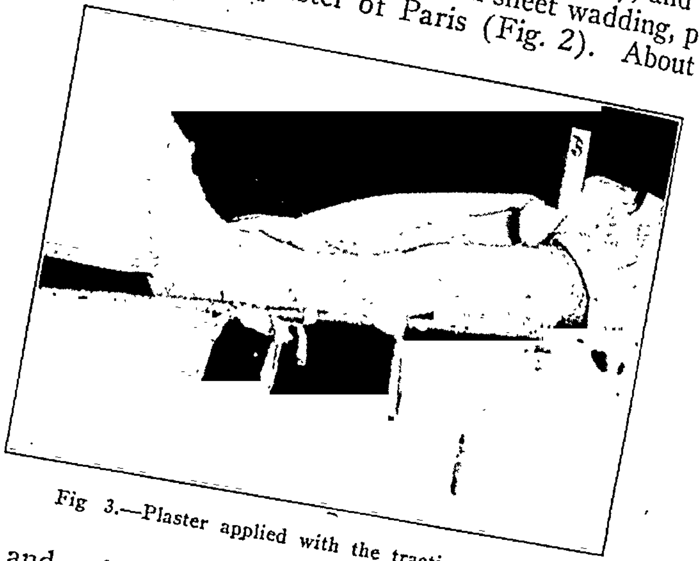

Fig 3.—Plaster applied with the traction still on.

A careful study of the roentgenograms has shown just what is to be accomplished. A sufficient amount of traction is now applied to simply straighten the leg when the operator, who is grasping the leg at the point of fracture, with both hands, gently elevates, thus slightly angulating the fragments. Experience teaches when, in this way, the bones, especially the tibia, are end to end. Then as traction is increased, the leg is gently lowered until it is perfectly straight on the supporting cross-bands. The strong traction necessary also prevents the leg from sagging. If the fracture, particularly of the tibia, is transverse and the frag-

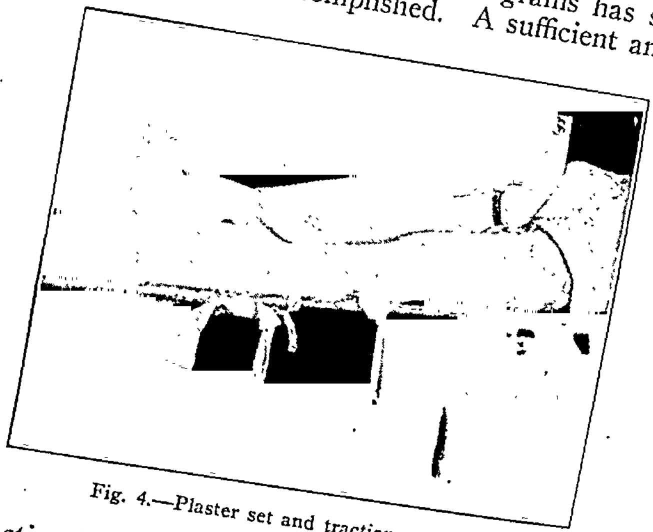

Fig. 4.—Plaster set and traction removed.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

ments are end to end, such strong traction is not necessary; but if the fracture is oblique, full and strong traction is necessary all the time and until the end of the application of plaster. If the fracture is at the lower end, the webbing for the traction should go downward over the outer malleolus; in this way, not only the tibia, but also the fibula can be gotten into apposition, if the fracture is higher up, the traction webbing should go down over the inner malleolus, and in some cases it must go down over both malleoli, in order to pull equally on both bones. Usually in simple fractures, both bones can be arranged, but if perchance the fibula is not quite controllable, the tibia can be gotten into perfect position and the fibula ends in contact, if not in apposition, in which case the fibula should take care of itself as far as union is concerned.

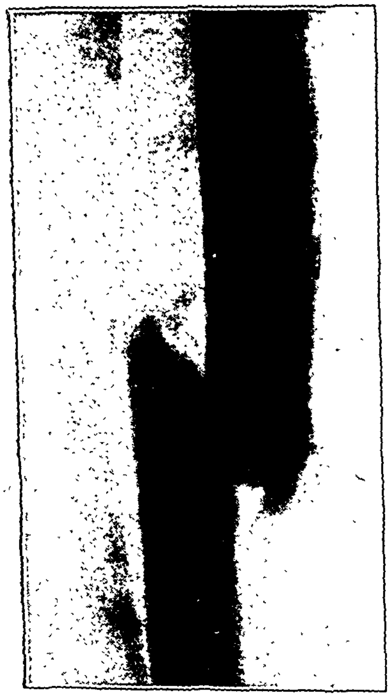
Fig. 5.—A comminuted fracture of the tibia with a simple fracture of the fibula (Case 1).

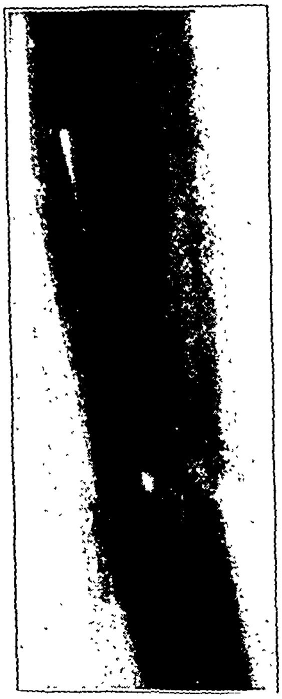
Fig. 6.—The lateral view after setting (Case 1).

When it is thought that the ends are in apposition on the frame and traction applied, a roentgenogram must be taken in at least two views, to be sure of such fact. If it is not all right, a glance at the plate shows just what further work is to be done, and it must be done then and there. When it is all right and actually demonstrated (by Roentgen ray), the mechanics as described will hold while plaster of Paris is applied and allowed to set. Then still another picture must be taken through the plaster, to see if the fragments have remained in position. The plaster is applied to the whole leg, up to the groin and including the foot.

This work, in private practice, is usually done at the office, and as the time is not long, the patient quickly recovers from the anesthetic and may be taken home easily in a machine. If an automobile is not obtainable, the ambulance may be utilized. It is always urged to bring the patient to the office, because the powerful Roentgen-ray machines are there, and the facilities for developing the plates are better. If, however, for some reason the patient insists on having it done at home, a portable Roentgen-ray coil is set up at the bedside and the plates developed in a darkened bathroom or even in a clothes closet.

If now, the last roentgenogram taken through the plaster shows that the bones have not been quite perfectly held, or if the picture, which is again taken at the end of the second week, shows that the position is not satisfactory and any change has to be made, this is the time to make it, because it is at about this time that material begins to be thrown out which is later to become calcified, and thus make a solid and bony union. This particular time is selected because when this material begins to be thrown out, the fragments may be readjusted and this callus material is of some assistance in sticking the ends of the bones together. This readjustment may be so slight that an anesthetic is unnecessary, or if much is to be done, an anesthetic is necessary. If readjustment is made, it means also that another plaster cast should be applied. At the end of a month from the fracture, this cast may be bivalved, so that the posterior half may serve as a splint for two or three weeks longer, depending on the case.

If the mechanics have been carefully applied at the first setting, there is nothing to be done until this bivalving of the plaster.

Instead of showing any number of cases, I shall present only four.

CASE 1.—This was a comminuted fracture of the tibia, and a simple fracture of the fibula (Fig. 5). Figures 6 and 7 show the bones pulled down into position.

CASE 2.—This was a comminuted fracture of both bones just above the ankle joint. Figure 8 is the worst view, and Figure 9 (also the worst view) shows the bones after being pulled down into position and quite some time being spent in manipulation while the traction was applied.

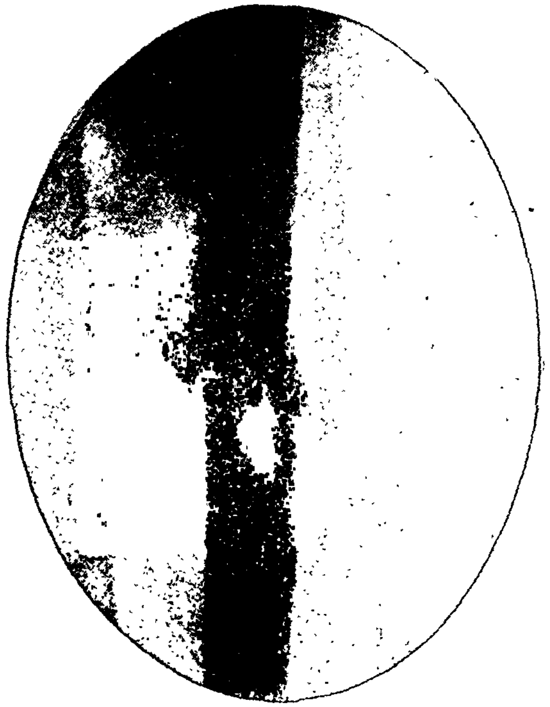
Fig. 7.—The anteroposterior view of tibia after setting (Case 1).

CASE 3.—This was a compound comminuted fracture of both bones which suppurated (Fig. 10). This case was reported at the 1913 meeting of the American Orthopedic

Case 4.—This laboring man presented himself fifteen months after the accident still unable to stand on his feet for very long intervals of time without pain and consequently still unable to work. The roentgenogram shows the bones sagging backward and inward, representing, to my mind, a necessarily weak union and hence a sufficient excuse for his disability (Fig. 13).

The treatment of fractures offers a very fascinating field for men of mechanical ability, and the class of fractures here treated, and indeed all fractures should be studied carefully not only to evolve methods whereby the (open) operative treatment may be obviated, but also that the mechanical treatment may give better results without the risks.

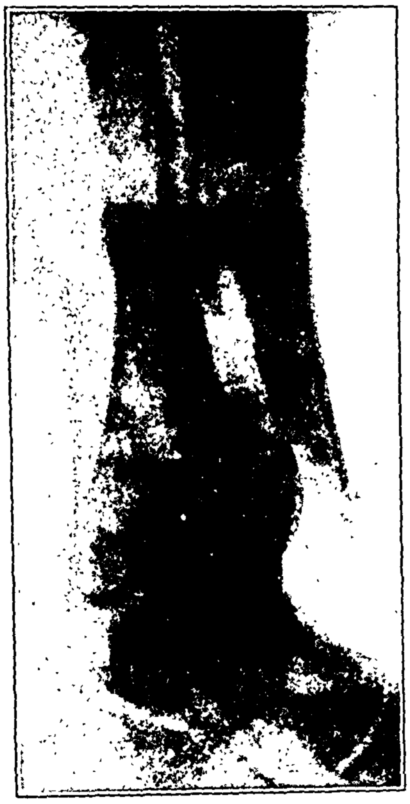

Fig. 8.—Comminuted fracture of tibia and fibula just above the ankle (Case 2).

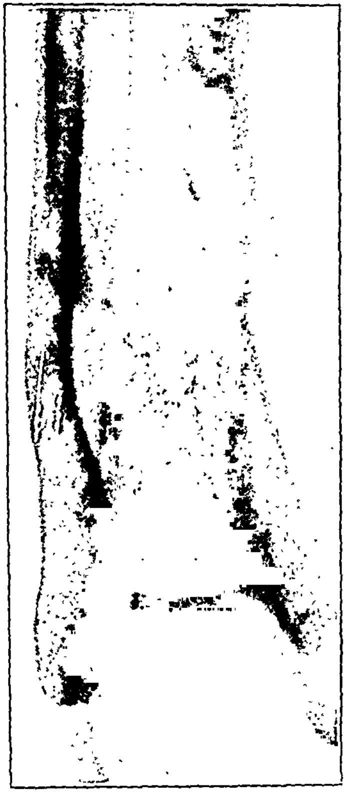

Fig. 9.—The bones pulled down into position (Case 2).

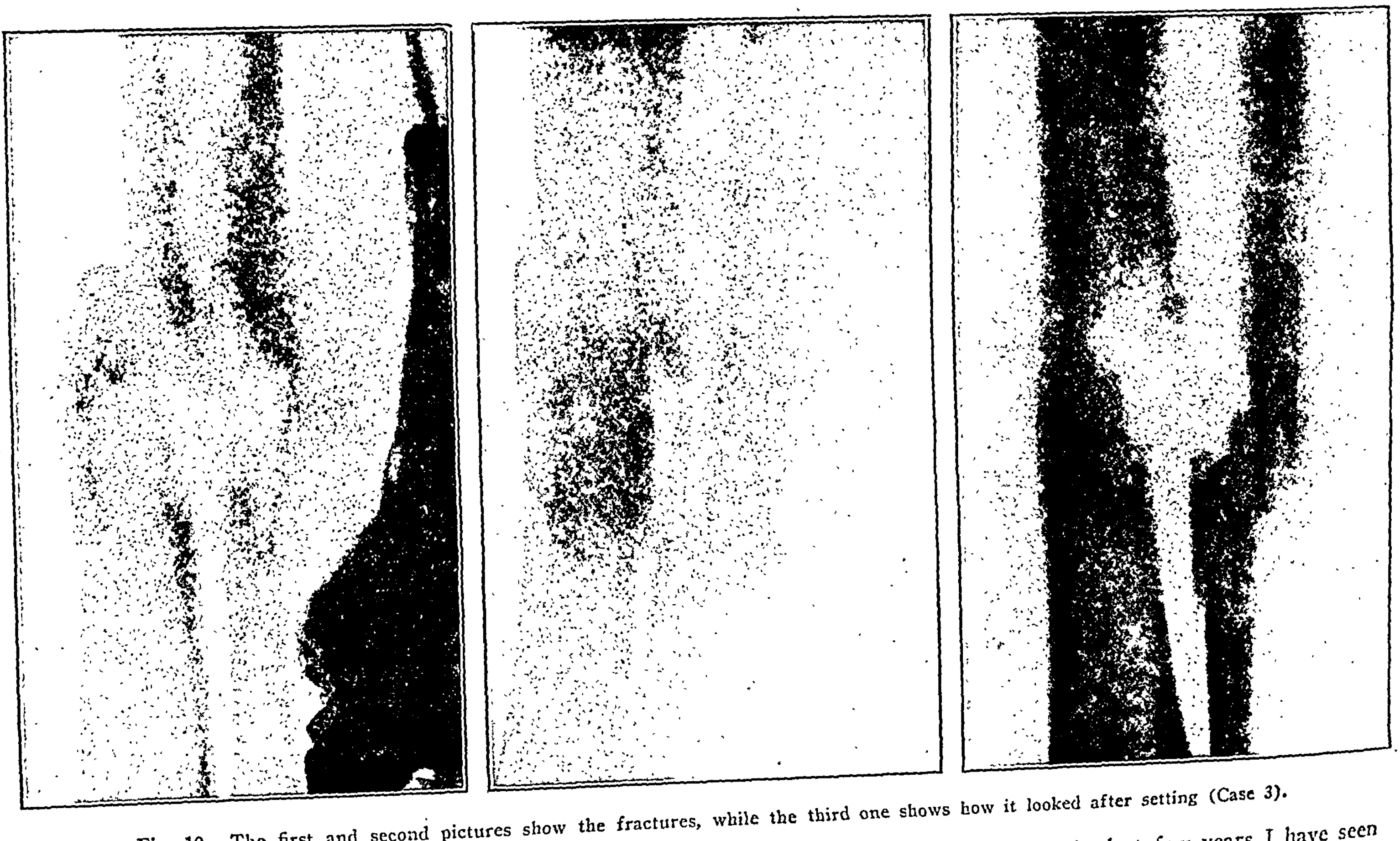

Fig. 10.—The first and second pictures show the fractures, while the third one shows how it looked after setting (Case 3).

ABSTRACT OF DISCUSSION

Dr. H. W. Orr, Lincoln, Neb.: Some years ago, having to treat such a fracture as Dr. Peckham has described, I had occasion to use a method that I have since used with great success, namely, having first applied, as carefully as possible, a perfectly fitting cast on the foot to within a few inches of the point of fracture, I then apply plaster above the fracture, including the knee, which is flexed; so that I can make traction against the fracture and the knee. Then I manipulate the fragments of the tibia and fibula to as perfect a position as possible, and apply plaster over the point of the fracture. Thus, the plaster at both ends having set, and the fracture being under control with traction on the two completed portions, the final instalment of plaster is put on over the point of fracture, with sheet wadding beneath it. The patient referred to was in the country, and could not then be moved; but he was brought to town a week later, to have a roentgenogram taken. It was found that the position was perfect. No change was made, and I got a good result. I have done this in other cases of fracture of the leg and have always secured equally good results, without pressure necrosis. I have tried it occasionally in fracture of the femur and arm, and have generally obtained as good results; but in fracture of the leg, I have had a splendid result in every case.

Dr. Fred H. Albee, New York: It is important to treat these cases mechanically, if possible, without operation; and especially to avoid the use of the metal or Lane plate. Within the last few years I have seen a large number of ununited fractures of the tibia in cases in which the Lane plates had been used. How much these plates had to do with influencing non-union, I do not know; but it seems probable that they had something to do with it. For instance, I cite a case in which there was a fracture of the tibia and two of the fibula. The tibia was plated, and both fractures in the fibula were untouched. The one on which the Lane plate was used, failed to unite, while both of the others united perfectly. I believe that a large percentage of these cases can be controlled by the mechanical methods mentioned by Dr. Orr, Dr. Peckman, myself and others. The Lane plate, even if there is no suppuration, may effect non-union. In a case of fracture of the tibia the Lane plate was used and a large sequestrum came out. There were 2½ inches of the shaft of the tibia removed on account of infection. It was the entire lower end of the upper fragment of the tibia included in the upper end of the Lane plate. As the patient was most anxious to get back to work, we put in a graft ten weeks after removal of the sequestrum, although there was still a sinus. The graft held in, spanning this 2½ inches of space; and to-day the patient has a very firm leg, which he uses constantly in his work. In the presence of a sinus and a loss of 2½ inches of the tibia, union with the preservation of the full length of the leg, could, I believe, have been accomplished in no other way except by the inlay bone graft.

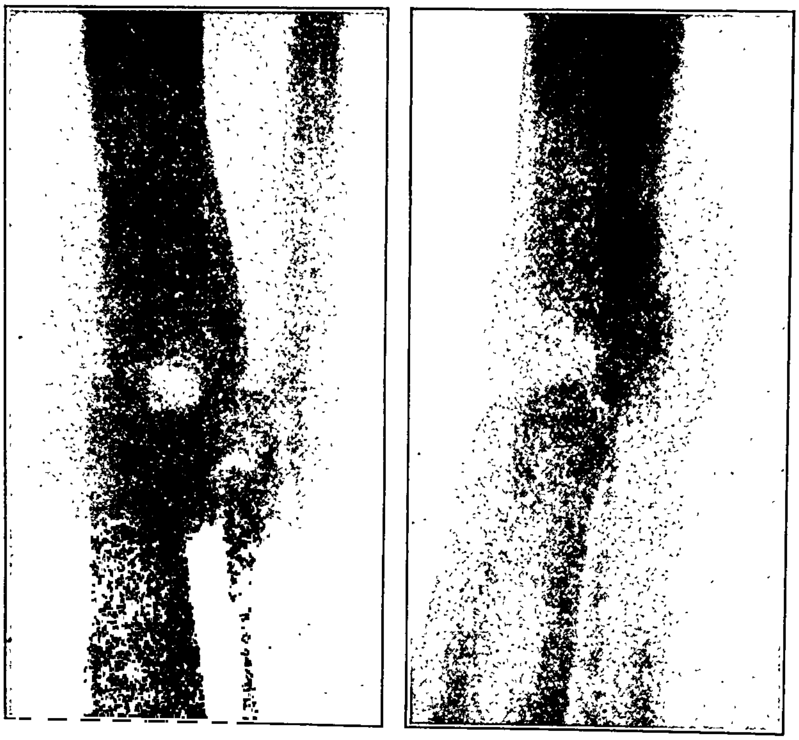

Fig. 11.—About four months after the injury (Case 3).

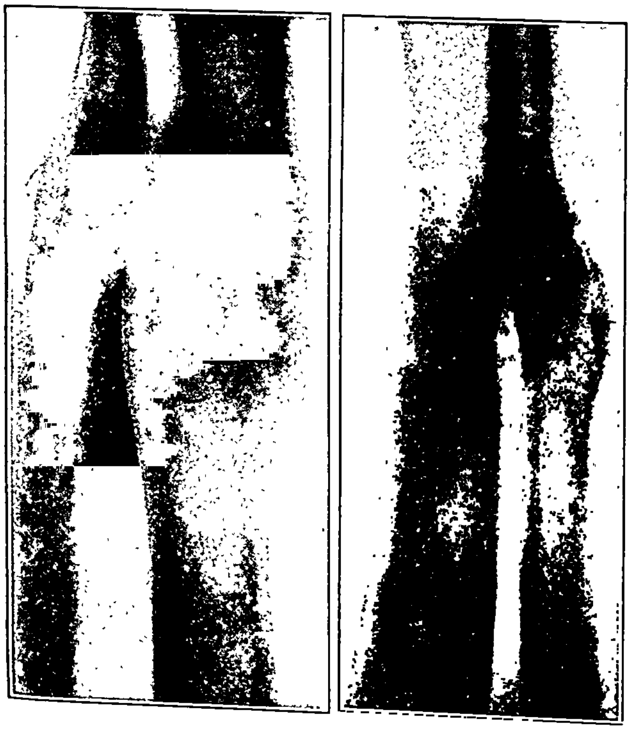

Fig. 12.—About seventeen months after the injury (Case 3).

DR. S. C. BALDWIN, Salt Lake City: I am afraid that Dr. Peckham has overlooked, to some extent, the future use of the limb after the healing of the fracture has taken place. One of his roentgenograms shows twisting of the lower fragment on the upper fragment, and several of the plates show that the lower fragment of the fibula was overriding the upper fragment. If these cases are watched afterward, it will be found that many come back for the relief of pain in the feet, as the result of a present or an approaching flat-foot, because of the weight-bearing being on the wrong part of the ankle. As I have before remarked, I suppose that none of you has ever seen a painful foot on which the patient walked in the position of varus. It is only in the position of valgus that I have seen painful feet. If the fracture is placed in a position in which the lower fragment of the fibula overrides the upper fragment, there will be, in all probability, a condition of valgus later on. Also, when the fracture is put up in such a position that the lower fragment of the tibia is twisted outward, a condition of valgus will come on later, due to this position. It is important to put up all fractures of either the fibula or both bones of the leg in a position of varus. Dr. Orr's suggestion with regard to making traction through the plaster dressing is an important one. I have found in a number of

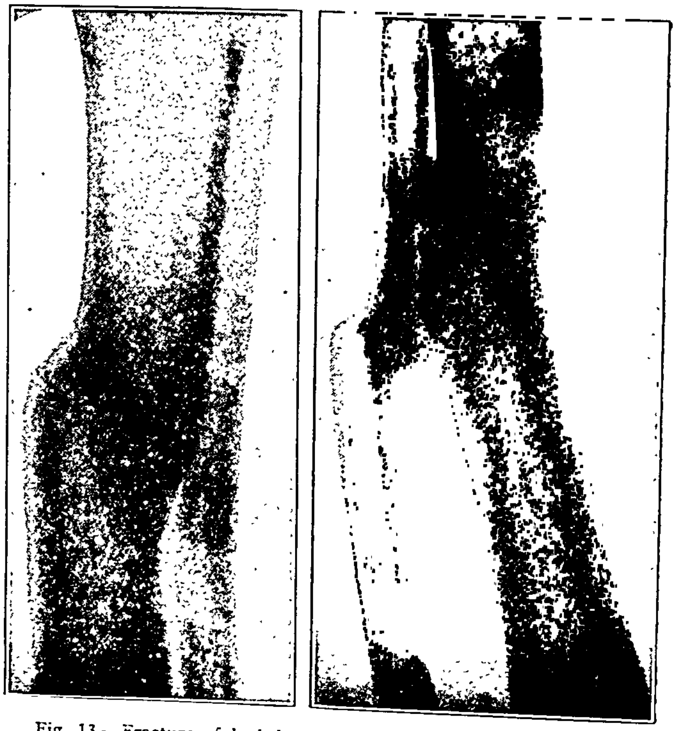

Fig. 13.—Fracture of both bones of the leg fifteen months after accident (Case 4). The bones are sagging backward and inward. (How not to do it.)

cases that extension made with the cast on is very much more comfortable to the patient than traction made on the foot without the plaster cast.

Dr. John Ridlon, Chicago: I wish to utter a word of caution against putting on a plaster boot and making traction on it. The heel very easily becomes sore from the constant pressure used in making traction on the plaster boot and maintaining it by the plaster boot and a fixed point of the bone. When a patient complains of the heel or the dorsum of the foot, the matter should be at once investigated. I had the misfortune in one case to have a necrotic spot produced on the heel as big as a silver dollar, which took four months to heal. It is a beautiful way to make traction; but the padding must be very thick, and great care exercised lest necrotic spots appear.

Dr. J. D. Griffith, Kansas City, Mo.: We must be, and are, exceedingly interested in all this fracture work. We must remember that the public to-day expects 500 per cent. more than it did thirty-five or forty years ago. We are now not only more liable to complaint from the public, but also to be cautioned by the attorney for the patient that we shall be brought up before a judge to decide whether or not the fracture was properly treated. Nowhere in the body do we get into more trouble than in fractures between the foot and the knee, with the exception of the ordinary common Colles's fracture; and this is the place where the individual feels the pain. He will then hunt up a shyster attorney to bring suit on account of the pain in the foot after a fracture of the tibia or fibula. The roentgenogram, which he has succeeded in getting in plate or picture from the other man, shows that he has not a perfect line in one position or the other. If he gets hold of the wrong one, or the worst one, this will raise a row. Every now and then, in making this forced traction that Dr. Peckham speaks of, on the Bradford frame or in any other way, we do not always know the condition of the patient's musculature and ligamentous structures as we should. I was unfortunate in one case, in which, while making this traction, the following day — or shortly afterward, within two or three hours — there was a sharp, acute, synovitis of the knee-joint. I made up my mind that in this case, although the fracture was at the juncture of the lower and middle third, I had made traction enough to frazzle or nearly tear in two the lateral ligaments of the knee; and it was six or eight months before the patient could put weight on the knee without pain. I came near getting into a lawsuit over this case, hence, this word of caution. This is an exceedingly interesting phase of the subject; because we are continuously advancing, and our education of the people is now such that they quickly learn every thing that we should do.

Dr. F. J. Cotton, Boston: I agree entirely with Dr. Albee. Dr. Peckham's work is interesting, not only in general, but also because it is the way by which we can avoid non-union in the lower half of the leg, which has been annoying us for so long. Frequently cases of non-union have been observed after the use of Lane plates, and a good many cases have occurred without previous plating. It seems to me that it depends on poor reduction; and that our way out of the difficulty depends on careful mechanical work, so as to get an exactly true position and to obtain primary healing, even in this poorly nourished region of the body. This is the only way to avoid the cases that come to us in such large numbers later on.

Dr. F. E. Peckham, Providence, R. I.: So far as Dr. Orr's method of treatment is concerned, I distinctly stated in my paper that while this is my method, the other may be equally good. I cannot use Dr. Orr's method so well as my own because I am not sure of my alignment after the foot is encased in plaster. This statement that these cases must be clinically in alignment also answers Dr. Baldwin. I think that he must have misread the roentgenogram, because these fractures are in alignment clinically, and the weight-bearing of the patients is all right. Dr. Ridlon's caution is well given. I have sorrowed for the same reason that he has. I had a case of a bad slough on a heel; but I have found that with the thickness of the felt that I am now using, I have, so far, been able to avoid such accidents. Nevertheless, that is an important point. The heavy gray felt seems to overcome this difficulty.

ANKYLOSIS OF THE ELBOW

WITH REPORT OF FOUR CASES TREATED BY ARTHROPLASTY*

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BOSTON

Ankylosis of the elbow is probably more objectionable than ankylosis in any other joint in the body. Elsewhere, while stiffness is objectionable, there is, nevertheless, an advantage gained in obtaining stiffness in a good position, more particularly in the hip and knee joints. In the hip, for example, we try to get extension and abduction, realizing that flexion and adduction are deformities interfering with function. In these joints, the end-results of arthroplasties are not so certain. In the elbow, however, there is no position in which ankylosis will not interfere with function.

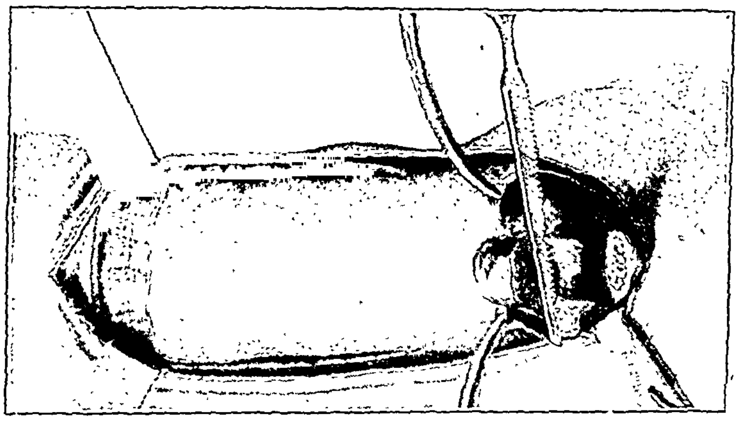

Fig. 1.—Arthroplasty (Murphy). Skin and fat dissected to either side. Fat flap below skin to triceps elevated. Ulnar nerve dissected out and retracted by gauze. Olecranon tip sawed through and pushed up. End of humerus being sawed off.

Ankylosis is in the main the result either of infection or of trauma. The former may be caused by various organisms. When the onset is sudden and the course severe, the causative agent is usually the pneumococcus, gonococcus or streptococcus. Ankylosis may, however, result from a polyarticular arthritis, of insidious onset and progressive course. In the former, the resulting ankylosis is usually bony; in the latter, at least at first, it is fibrous.

Following trauma the ankylosis is commonly the result of a dislocation fracture with wide displacement. The ankylosis result is in this case due to mechanical interference. The hematoma formed at the time of the trauma organizes, forming considerable exuberant tissue; ankylosis finally resulting is fibrous.

Various methods have been tried to remedy this ankylosis. Wolff attempted to correct the deformity by removing all the exuberant tissue. This method has usually been attended by poor results, owing largely to the inaccessibility of the part and difficulty of approach.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

Various foreign substances have been used by different men to separate the parts. Gluck used ivory pegs, Pupovac magnesium sheets, Baer[1] chromicized animal membrane. These have been found unsuccessful and have been largely abandoned. The inabsorbable material acts as a sequestrum and later gives rise to irritation. The Baer membrane has not been successful in my hands because of reankylosis after the rapid absorption of the membrane.

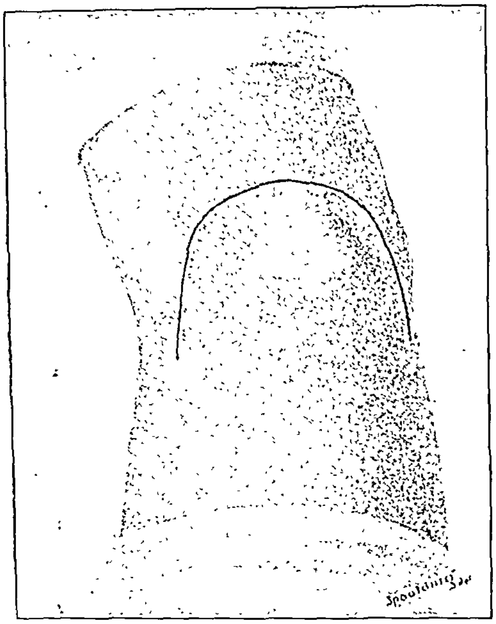

Fig. 2.—Line of incision.

The interposition of soft tissues was first used in a case of temporomaxillary ankylosis in 1893 by Helferich,[2] who interposed part of the temporal muscles.

In the elbow the first operation on record is that of Quenu[3] in 1902, who resected extensively the inferior end of the humerus and the superior end of the forearm, and detaching the anterior ligament and doubling it with a few fibers from the brachialis anticus, fixed it against the bony surface of the humerus with three sutures to the fibrous posterior parts, keeping the parts in plaster fifteen days. He reported a good functional result.

Murphy[10] first used his fascia method in October, 1901, on a knee joint. A large layer of fascia lata with a thin layer of muscle tissue attached was dissected from the outer surface of the vastus externus, with its base below and anterior. A small flap of fascia covering the vastus internus was dissected free and placed between the patella and the femur. He first mobilized the elbow by this method in 1904 in a case of ankylosing arthritis. A pyriform flap of deep fascia was dissected from the posterior surface of the triceps. The flap was 4½ inches long by 2 inches wide at its upper end and received its blood supply from a broad pedicle which remained attached to the muscle and fascia just below the level of the olecranon. After the bony parts had been remodeled, the fascia was drawn down and turned onto the joint around the inner margin of the olecranon. The proximal portion of the flap covered the trochlea and lined the olecranon depression and the lesser sigmoid cavity, while the distal portion covered the external condyle. Subsequent events showed that the flap was not carried sufficiently high on the anterior surface of the humerus to permit adequate flexion of the joint. Five months later, the patient could pass his hand through an arc of 5 inches. Pronation and supination were about one-half normal. His second case was reported two months after operation. The hand could be moved actively through an arc of 3 inches and the elbow forcibly flexed to an acute angle and extended to 160 degrees. Pronation and supination were approaching normal.

I believe from my experience thus far that there are certain objections in dealing with the fatty tissue used by Murphy, such as embolus, fatty necrosis from poor circulation and as happened in Cases 1 and 2, skin necrosis due to the use in the flap of the tissue holding its blood-supply. I, nevertheless, report these cases, citing my fat and fascia method in the first two and the transplantation of fascia lata in the third and fourth, a procedure much more surgical in appearance and with development in technic I am sure more satisfactory in final results.

Case 1.—M. R., woman, aged 34, referred by Dr. Hussey of Holyoke. Family history negative. She has had attacks of rheumatism for the last thirteen years, affecting ankles, elbows and knees. These were affected nine years ago, and were operated on one year later. The right wrist was attacked five years ago, the left wrist and knee six months ago. Examination revealed a well-developed and nourished woman. Heart and lungs negative. Right knee ankylosed with scars on either side. Both knees slightly flexed. Right ankle, contractures. Ankylosis with some contracture of the Achilles tendon. Right elbow ankylosed in about 125 degrees. Left elbow, motion good with exception of 10 degrees limitation in extension. Patient was admitted to the orthopedic service of the Carney Hospital, Sept. 6, 1910, and received rest, compression strapping for the knees, and spiral strapping for the feet, together with aspirin and flannel bandages. Under this treatment very slight improvement took place in

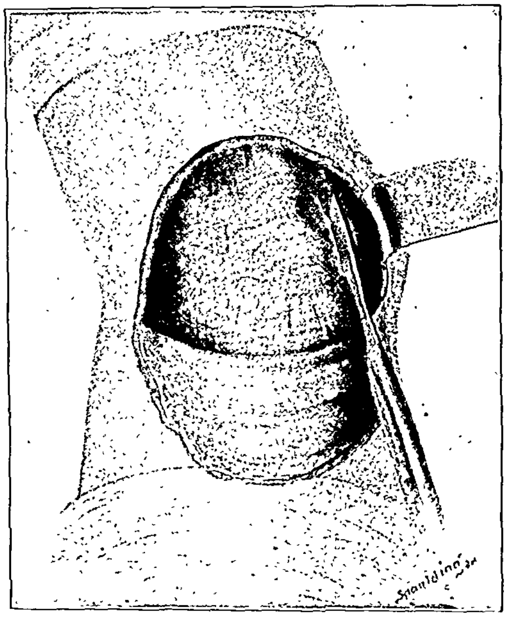

Fig. 3.—Dissecting out ulnar nerve.

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[1] Baer: Am. Jour. Orthop. Surg., 1909-1910, vii, 1.
[2] Helferich: Verhandl. d. deutsch. Ges. f. Chir., 1894, xxiii, 504.
[3] Quenu: Bull. et mém. Soc. de chir. de Paris, 1902, xxviii, 724.
[10] Murphy, N.: Tr. Am. Surg. Assn., 1904, xxii, 313.

the knees and feet. In October, on account of the swelling and bogginess of the left knee, an arthrotomy was advised.

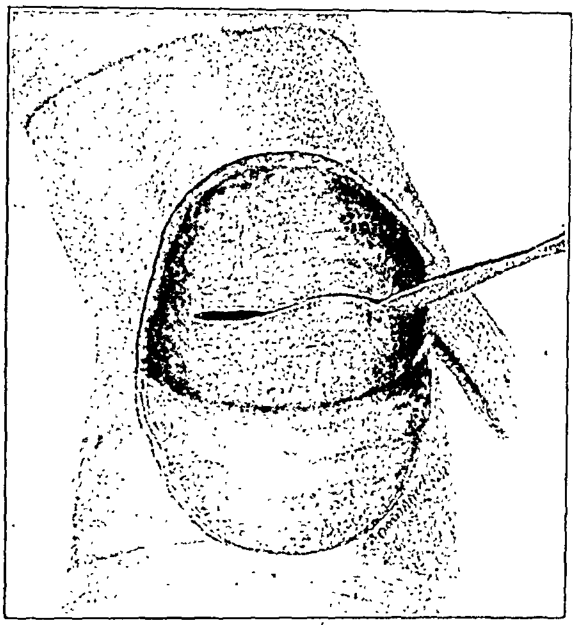

Fig. 4.—Cutting through muscle and fascia to joint.

October 19, ether operation, Dr. MacAusland. Incision about 4 inches long, on the inner side of the left knee, extending through the fascia and capsule into the joint. The synovial fluid was thickened and viscid, and a large lipoma present in the anterior part of the joint which was removed as well as many of the small fringes, and the joint washed out with salt solution. The incision was closed in the usual manner. Daily manipulations followed this operation, beginning on the fifth day, and an uneventful recovery took place as regards the knee.

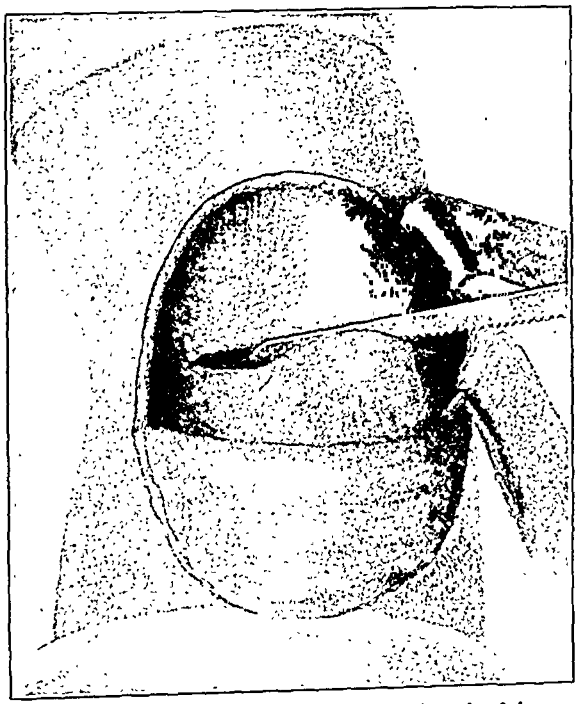

Fig. 5.—Sawing through olecranon tip and end of humerus.

As the right elbow was stiff and in a very ungainly position, an arthroplasty was advised. Nov. 9, 1910, ether operation, Dr. MacAusland. An incision was made extending from just below the right shoulder down the back of the arm to about 3 inches below the elbow joint (Fig. 1). The skin was dissected off at each side, and a large flap of fat and fascia just above the olecranon process freed. The right elbow joint was then opened by a transverse incision across the olecranon and through the capsule. The end of the humerus was excised and the radius and ulna rounded off with a file, making an artificial joint. The flap was then turned from the back of the arm to the inside of the joint and sutured there by heavy catgut, and the olecranon process with the triceps tendon was put through a slit in this fascia and united to the ulna by heavy chromic catgut sutures. The skin was closed with interrupted catgut, and silkworm-gut.

Nov. 10, 1910, the right hand was considerably swollen and painful, for which pressure and hot fomentations were applied. The skin on the upper part of the arm became somewhat necrotic from poor circulation and later sloughed.

November 21, the stitches were removed.

November 23, dry dressing, wound cleaned.

November 30, passive motions started daily. First attempt was made at motion, when 30 degrees were attained.

December 7, doing well; gaining motion gradually.

Dec. 24, 1910, massage to hand, forearm and shoulder.

Jan. 11, 1911, about 30 to 40 degrees motion in flexion and extension obtained. Heavy granulation tissue.

January 18, discharged from the house. Dressings to be done at home.

Feb. 28, readmitted to the house for manipulation. Normal motion was obtained.

March 13, 1911, discharged to continue with massage, manipulations at home. Since this time patient has been seen in the out-patient department. There is practically no lateral mobility, and the end-result is perfect function.

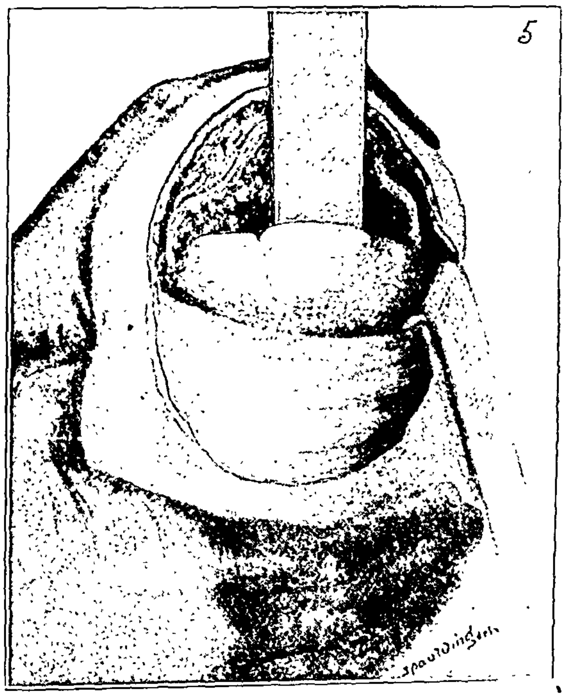

Fig. 6.—Splitting off tip of olecranon with chisel.

Case 2.—F. P., woman, fell and injured elbow, March, 1908. The injury was treated as a sprain and put in splints for about a week. The elbow was discolored and swollen. Liniments were prescribed for the stiffness with no effect. She was able to go back to work in the course of a few weeks, having only slight pain and stiffness, but as time went on, the motion shut down. She received osteopathic treatments for a month without any result. In 1908 she attended the hospital clinic, where roentgenograms were taken, and the arm kept under observation for six weeks. During this time the elbow seemed to be stiffening more and more. Patient entered the orthopedic department of the Carney Hospital, Nov. 17, 1908, and at that time had about 30 degrees motion, but was unable to flex the arm beyond a right angle.

Nov. 18, 1908, a 4-inch incision was made between the external condyle and the olecranon, and posterior displacement of the epiphysis of the humerus was found which, with the callus present, prevented extension. The projection of the humerus forward prevented the flexion beyond a right angle; as much as possible of the exuberant bone was removed.

Nov. 20, 1908, the second day after operation, she had a great deal of swelling and pain in the fingers. The plaster cast was therefore removed. Patient had lost all motion of the fingers owing probably to the forcible manipulation and the large amount of swelling. The plaster was unfortunately allowed to remain on for three days and a paralysis developed.

Dec. 2, 1908, patient was seen in consultation with Dr. Bullard, who considered the case one of Volkmann's paralysis.

Dec. 3, 1908, received daily massage and baking.

Feb. 9, 1909, entered the orthopedic service of the Carney Hospital and was recommended to have a manipulation under ether.

Feb. 10, 1909, ether manipulation, Dr. MacAusland. The right forearm was forcibly flexed and extended through an arc of about 60 degrees, during which the adhesions were felt to break up.

Feb. 14, 1909, the patient has gained about 15 degrees of motion but complains of some pain in the elbow and shoulder. From the time of the first operation, Nov. 17, 1908, until April, 1909, she could not move any of the fingers and there was no rotation. The first sensation of life came in the arm with a slight twiching of the fingers, April 2 and 3, 1909. She received daily baking and massage and passive movements from this time on. Gradually, through the summer months, she gained entire control of all the muscles of the forearm and fingers, although she had only a few degrees of motion in the elbow. This illustrates a splendid recovery from the Volkmann's paralysis, due, probably, to the efficient baking and massage, but, unfortunately, on account of sensitiveness of the elbow, there was not so much motion as before operation, so that an arthroplasty was thought advisable.

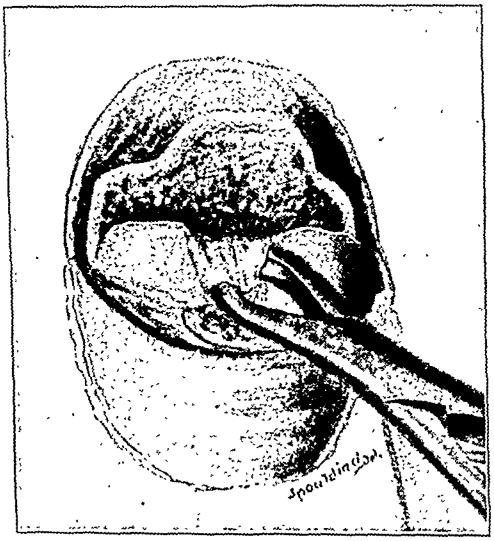

Fig. 7.—Cutting out with rongeur forceps bit of olecranon tip left in humerus.

In December, 1909, the patient entered the orthopedic service of the Carney Hospital, and at this time an arthroplasty of the elbow was done according to method described in Case 1.

The circulation of the skin above the original site of the flaps became somewhat diminished and there was a small amount of sloughing. Wound was dressed each day, and about the fifth day daily movements were attempted. In the course of a month, massage and baking were again taken up, and continued until May, 1910. The result is that the patient has full motion of the arm in flexion, and extension to within 15 degrees of straight, and has a perfect functional hand, in spite of the slight limitation in extension, and uses the arm daily, being employed as a stenographer.

Case 3.—D. W., man, aged 42, referred by Dr. Shea. Case operated before New Hampshire State Surgical Club. March 25, 1911, he received a contused wound of left thumb, which became septic, requiring, one week later, his entrance to hospital as the sepsis had become general. Five incisions were made in the left hand, two in the left wrist, one close to the left elbow joint, and one in the left hip. All had drains put in. A student in the hospital opened a swelling near the right elbow and cut into the joint. At the end of twenty-one weeks the patient was discharged from the hospital with bony ankylosis of the right elbow and with but a few degrees of motion in the left elbow. Both joints were slightly flexed. The left wrist had a sinus which still drained a little and he had little motion in the fingers, being unable to flex them to a right angle with the palm of the hand. He was unable to feed himself or to touch his head with either hand. He entered St. Joseph's Hospital a few weeks later and was operated on in March, 1912.

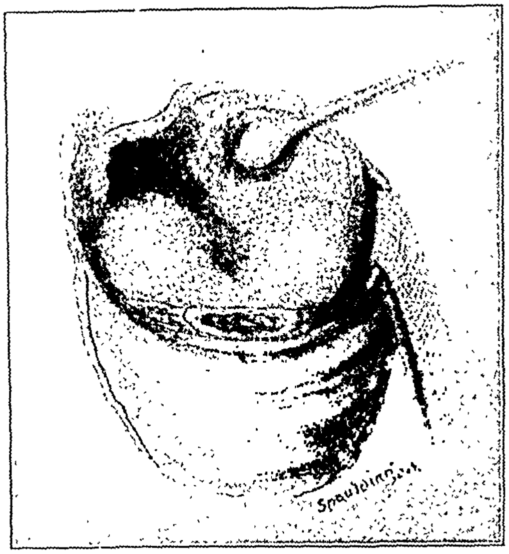

Fig. 8.—Scooping out ulna and radius with curet.

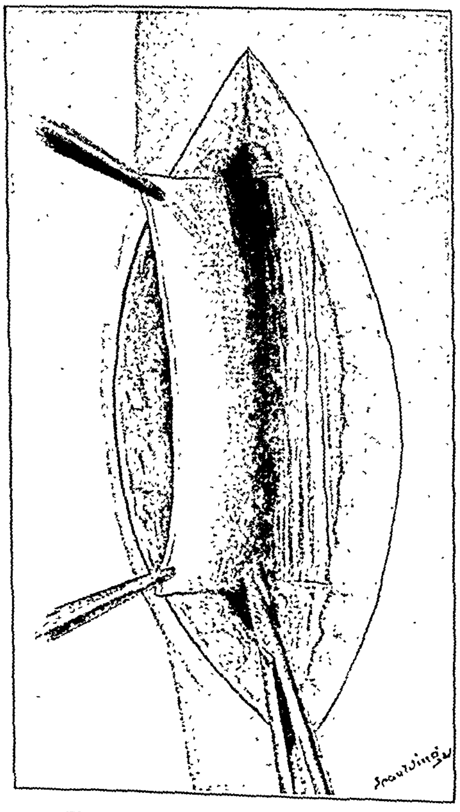

Fig. 9.—Cutting fascia lata from thigh.

Operation was performed by Drs. MacAusland, Shea and Wallace. After the usual preparation and the application of a tourniquet, a U-shaped incision was made, beginning on the lateral aspect about 3 inches above the elbow joint, and passing over the middle of the olecranon to a corresponding position on the opposite side (Fig. 2). The skin and superficial fascia was dissected up to a base line at the end of the incision and then retracted. The skin and fascia were then dissected a little on both sides and on the forearm end of incision. The ulnar nerve was dissected out of its sheath, and gently retracted with gauze (Fig. 3). A straight incision was made extending from one lateral aspect of the condyle to the opposite, crossing midway on the olecranon (Fig. 4). As the capsule and fascia were adherent the incision was made down to the bone over the condyle so as to elevate *en masse* the tissue which would serve as a new capsule. The olecranon was then sawed across and separated (Fig. 5). Owing to the extensive bony ankylosis, even with extreme force the joint could not then be broken open so that it was necessary to saw directly across the line of the old joint. When about three-fourths through the joint, it was possible to fracture the remainder (Fig. 6). There was no doubt of its being a bony ankylosis.

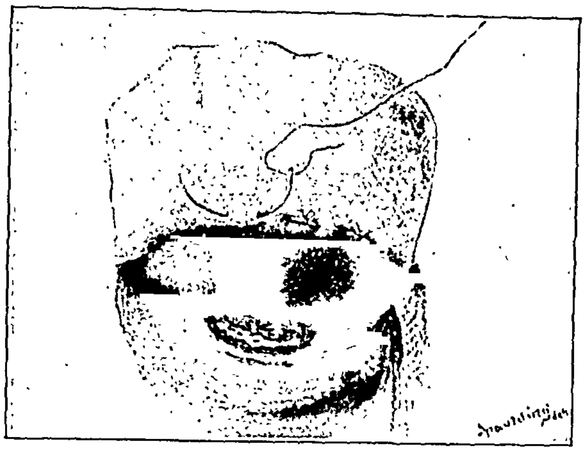

Fig. 10.—Sewing fascia lata to elbow joint anteriorly.

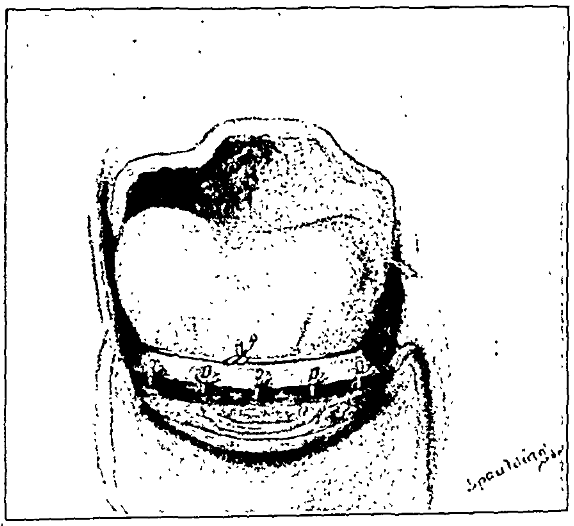

Fig. 11.—Fascia sewed over humerus; tied with kangaroo suture.

The capsule and fascia and ligaments were dissected back so as to allow the lower end of the humerus to protrude out of the wound when its square edges were snipped off with a rongeur forceps and a new trochlear or intercondylar surface formed (Fig. 7). A shoemaker's rasp was used to file this extremity as near like a normal humeral end as possible. A piece was then removed corresponding to the olecranon fossa in the normal humerus (Fig. 8). After this was cleaned, the corresponding surface of the olecranon was curetted so as to take the new humeral head. This modeling of the joint I do largely with a saw and file. To insure good function, the joint surfaces should fit accurately before the fascia is applied, but the joint should not be too loose. Only sufficient bone must be removed to give free motion. If too much of the ends of the bones is removed, a flail joint will result, giving the operation no advantage over an excision. When this mortising was completed, the fascia flap was dissected out of the right leg.

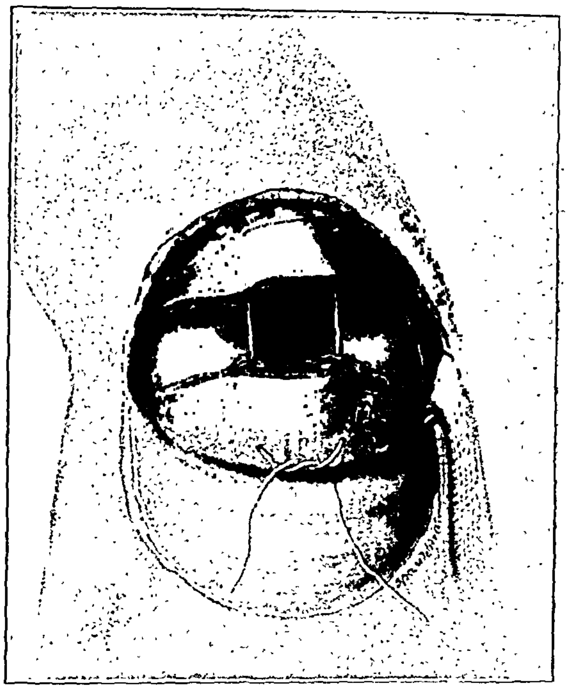

Fig. 12.—Kangaroo suture through ulna and olecranon tip.

A 5- to 6-inch incision was made on the outer side of the right thigh a little below the middle, extending down to the fascia lata. A piece was dissected out (Fig. 9) about 5 by 4 inches and the wound closed. This fascia, free from all fat, was placed about the new humeral condyles by attaching it first to the anterior capsule of joint (Fig. 10) and then tying it about the condyles so that all rough surfaces were covered and a purse-string suture was applied (Fig. 11).

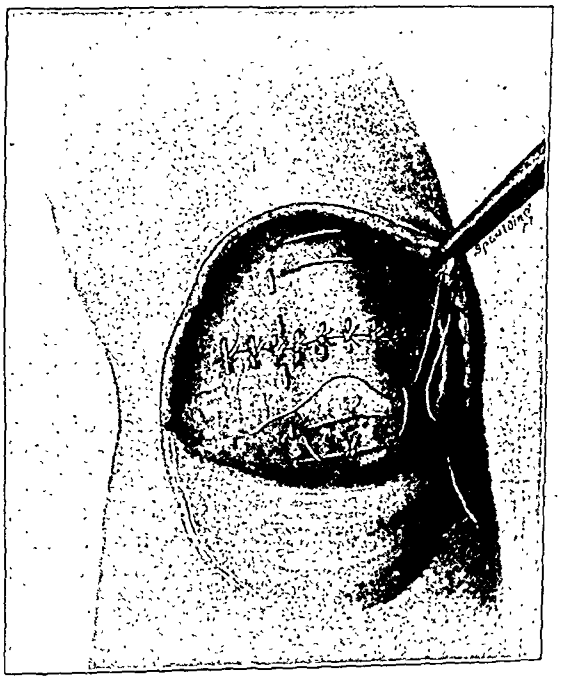

Fig. 13.—Stay sutures.

The fascia ligaments and old capsule were then sutured with chromic catgut. The olecranon was sutured with double chromic catgut (Figs. 12 and 13). The skin was closed with silkworm-gut, and a voluminous dressing applied with the arm at a right angle. Arm and forearm were placed on pillows with heavy dressings but no splint. Passive motion was begun on fifth day. Primary union took place of the wounds of the elbow and thigh. Passive motions were continued and increased, but at the end of six weeks it was found that the patient could not use either biceps or triceps muscles and he had lost all power from long disuse. However, after several weeks he educated the muscles by counting and attempting contraction at the same time and finally was able to flex the forearm himself, since when improvement has continued.

Result: He has full motion in flexion, extension and rotation now, and is able to feed himself and to do chores about the house, and put on his own clothes.

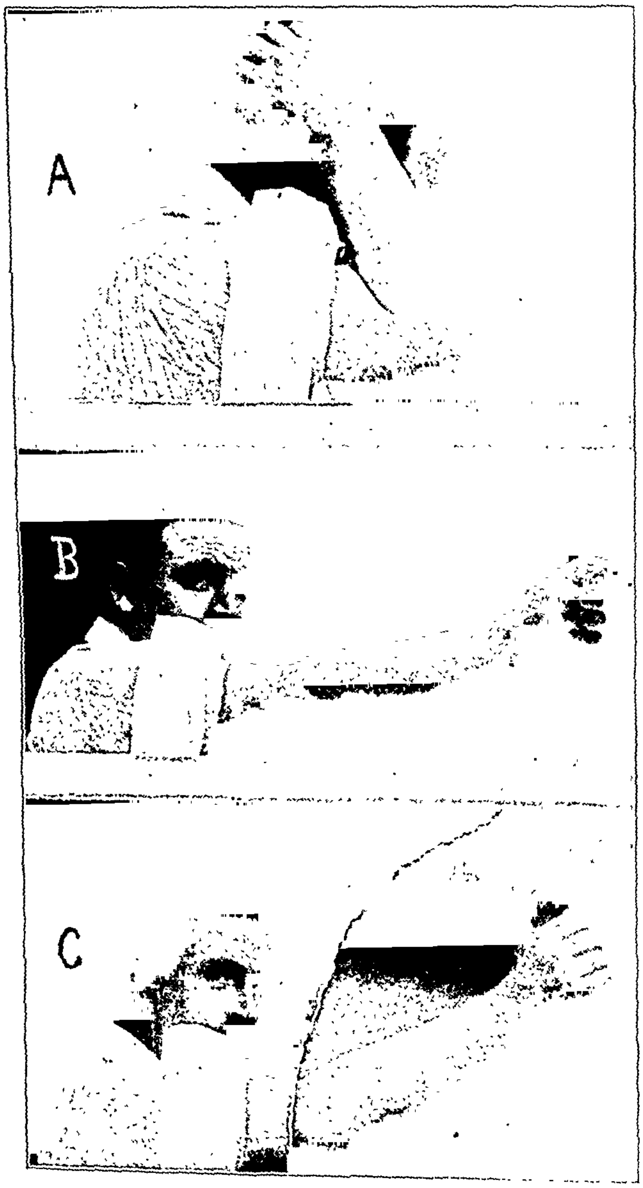

Fig. 14.—Ankylosis of the elbow: *A*, volutary flexion following arthroplasty; *B*, volutary extension following arthroplasty; *C*, voluntary flexion and extension following arthroplasty.

Previous to operation, May, 1912, he was entirely helpless, unable to care for himself in any way. The first duty for every probationer in the hospital was to "feed D."

For the foregoing detailed report, I am indebted to Dr. A. W. Shea, Nashua, N. H.

Case 4.—E. S., woman, admitted to the Carney Hospital, Aug. 11, 1913, for immobility of the right elbow and right knee, of six years' duration. The patient states that while on a vacation she went in bathing while menstruating. Within twenty-four hours she was taken ill with a fever, accompanied by pain and swelling in all the joints. She was placed under treatment in her home without relief. At the end of eight months, the pain and swelling disappeared from the left shoulder and elbow so that she was able to feed herself. She remained in bed for twelve months. The symptoms continued to subside on the left side until at the end of the third year she was able to get about with a cane. As the fever continued to subside and the pain and swelling disappeared, the patient had pretty good motion in all the joints except the right elbow and right knee, in which pain and stiffness continued at the end of the fourth year and motion was out of the question. This condition remained up to the date of admission.

Aug. 14, 1913, roentgenoscopy revealed ankylosis of elbow joint and of patella to femur. Urine examination revealed specific gravity 1.015, acid; albumin 0, sugar 0.

Aug. 20, 1913, operation on right elbow by Dr. MacAusland, as in Case 3. Light plaster cast applied.

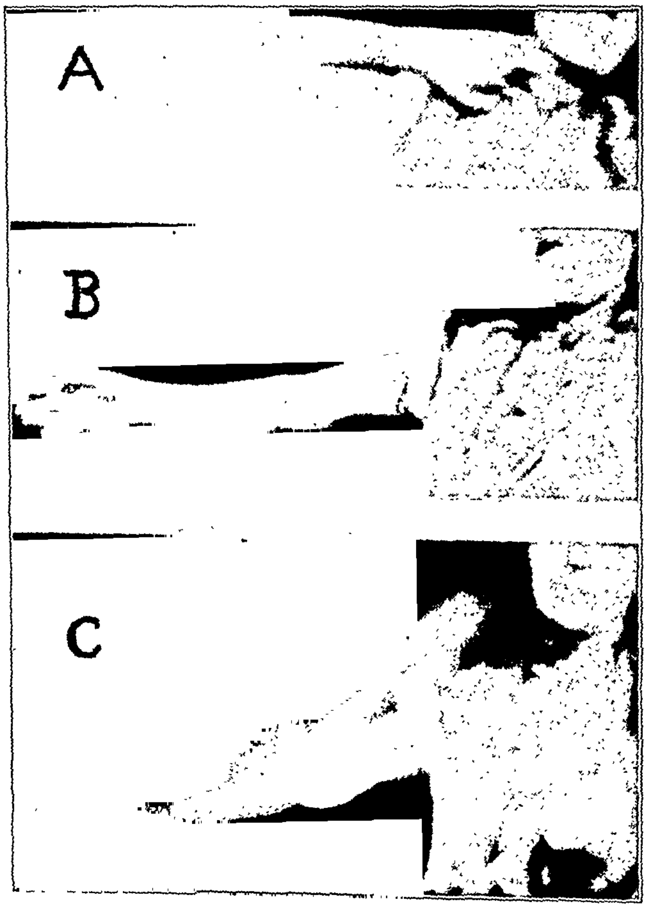

Fig. 15.—Ankylosis of elbow, six months after arthroplasty; *A*, voluntary flexion; *B*, extension and use of arm; *C*, voluntary flexion and extension and power of biceps.

August 22, good recovery; slight pain.

August 27, cast split for dressing.

September 1, wound healed by first intention, except for slight discharge from upper border.

September 4, manipulations daily; motion good.

September 10, arm can be extended completely, and flexed 15 degrees beyond a right angle.

September 15, traction for extending and flexing the arm.

September 20, massage and motion continued.

October 1, active motion possible.

October 15, manipulation of elbow under ethyl chlorid by Dr. MacAusland.

Patient now has perfect flexion and extension and no pain. Excellent functional result.

240 Newbury Street.

ABSTRACT OF DISCUSSION

Dr. Gwilym G. Davis, Philadelphia: Dr. MacAusland has done these operations by means of posterior incision. Dr. John B. Murphy advocates lateral incisions, and I have done it by means of two lateral incisions. It is perfectly feasible to do it with flaps. With the two lateral incisions we do not get great exposure of the parts; and it is extremely difficult to work. If it can be shown that no trouble occurs, for instance, in obtaining the union of the olecranon, which has been incised and detached, so to speak, the greater accessibility afforded by this operation renders it more desirable than the one by means of lateral flaps.

Dr. Charles A. Parker, Chicago: Will Dr. MacAusland state his opinion with regard to rotation in these cases?

Dr. W. R. MacAusland, Boston: First, answering Dr. Davis' question with reference to the non-union of the olecranon, I would say that this problem has arisen in one case. In Case 3, I did not think I was getting motion quickly enough so I gave an anesthetic and manipulated the joint. I suddenly felt the olecranon tear and could distinctly feel a separation. I paid no attention to it, however, but put on a voluminous dressing. Patient now has good motion in the elbow. I think a fibrous union resulted which is just as serviceable as a bony union. With reference to rotation, in two of these cases there was bony ankylosis between the ulna and radius, to which I paid no attention. The ankylosis still remains. I question whether in future procedure I should not go down and make a space in that joint, placing a piece of fascia between the surfaces. The patients, however, have perfect use of the arms in this present procedure, and none of them have the deformity of extreme pronation. The arm is supinated one-half, and, so far as I can see, has perfect function, with no motion between the radius and ulna. Had I found the type of extreme pronation existing, I might have considered an attempt to get motion between the radius and ulna or excise the head of the radius.

A NEW TYPE OF ANKLE FRACTURE *

FREDERIC J. COTTON, M.D.
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BOSTON

It seems a bit late to come forward with a new fracture, but in fact the lesion here in question has never been adequately described in print,[1] and has apparently escaped the notice even of those who deal with fractures habitually.[2]

It is in fact one of the common and typical lesions at the ankle, and its best claim to interest is because it is a lesion that every one must have seen, interesting not from its rarity, but from the very fact that it is common, that it is usually overlooked, and that unless reduced it results in serious disability in many instances.

I have been talking about the lesion for years, until some of my house-officers at the City Hospital, wearied by long insistence, have come to refer to it as "Cotton's fracture."

The characteristic point of the fracture under consideration is backward dislocation with the *splitting away of a wedge*, large or small, *from the back surface of the tibia at the joint*—a *wedge* that is *displaced backward* with *backward dislocation of the foot.*

This wedge carries the posterior tibio-astragaloid ligaments; foot and tibial fragment move together, up and backward.

Fracture of the malleoli is associated with this luxation; usually the malleolar fracture is not unlike that of Pott's, though sometimes the internal malleolus and the posterior tibial edge of the joint are included in one piece that is split away in a spiral line.

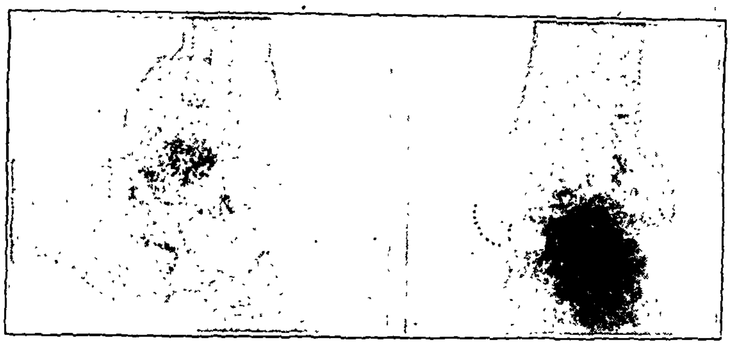

Fig. 1.—Type lesion, more than average total displacement of the foot backward, and in this case outward as well. This is a case that would have resulted in hopeless disability had reduction not been done.

As a rule, however, the posterior tibial fragment is separate, though associated with fracture of both malleoli.

There are no autopsy specimens, I believe, and no operative results on record, of cases opened up in the early days after the injury.

As a rule both malleoli are broken; hence the confusion with Pott's fracture!

It has long been recognized that certain cases of so-called "Pott's fracture" were complicated with a backward luxation of the foot. What has *not* been recognized is that nearly all of these cases are not really Pott's fractures at all!

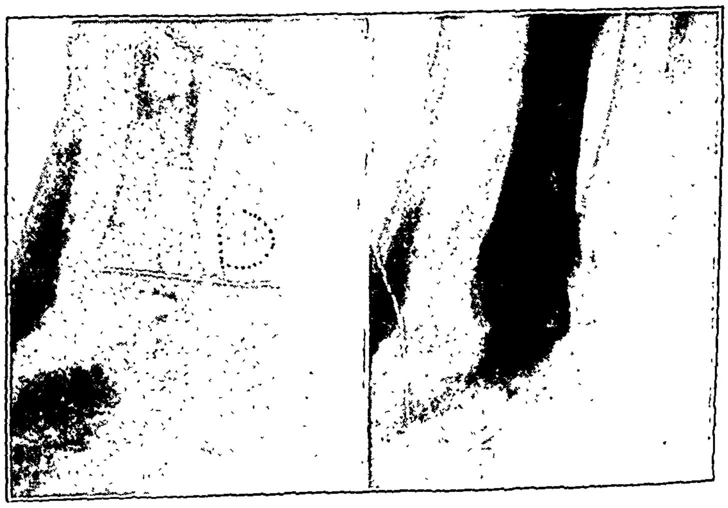

Fig. 2.—Type lesion, with extreme backward displacement. Dotted lines in the left-hand illustration show the wedge broken off the back edge of the tibia, as yet unreduced. The illustration to the right shows reduction of this fragment to an approximately normal site, a reduction incident to the correction (complete in this instance) of the great total displacement of the foot backward. In the second view the fragment seems much smaller. This must be the result of a change in the angle-bearing of this fragment in relation to the roentgenogram.

Of all the cases of ankle fracture I have seen in the last seven years, there has been but *one* of posterior luxation in which the fracture lesion here described has not been present—only one case of real posterior dislocation with Pott's fracture.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] The article by Speed in Surgery, Gynecology and Obstetrics for July, 1914, which does describe such cases had not been printed at the time this paper was read.

[2] I put the matter on record at a clinical meeting of the Boston City Hospital, and in my Dislocations and Joint-Fractures, W. B. Saunders & Co., Philadelphia, 1910, 540 et seq. (Figs. 951, 955, 956, 958, 977, 992, 1001, 1018, 1026, 1056, 1059, 1061 and 1067). Stimson records a couple of old cases belonging in this class (Fractures and Dislocations) and Brackett, E. G., of Boston (shown March 2, 1910), and Darrach, W., of New York, have each shown plates of single cases (not published).

In the rest (fifty-three cases of which I have records, more or less full, and others seen in hospital consultations, etc., which I cannot now trace), all have had the complicated lesion that gives the occasion for this paper.

They are no more to be classed as Pott's fractures than are the simple fibular breaks or the "inversion Pott's" cases that are indiscriminately lumped together under "Pott's" in the usual hospital records.

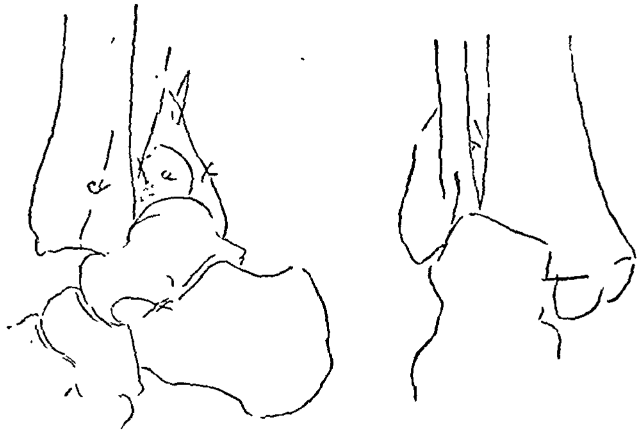

Fig. 3.—Type lesion, extreme displacement back and outward: *a*, posterior tibial fragment; *b*, *b′*, outlines belonging to the broken fibula; *c*, line of the tibial surface from which fragment *a* was broken away.

As I see ankle fractures in the mass, there are the following:

(*a*) Fibular fractures, *above* the joint level, first and commonest; (fractures of the external malleolus alone are rare).
(*b*) Pott's fractures of the type Pott really described.
(*c*) "Inversion Pott's fractures."
(*d*) The type here considered.
(*e*) Fractures just above the joint, and separation of the epiphyses.

I am not sure that our present type—Class *d*—is not more frequently met with than the "inversion Pott's" type.

My attention was first called to the lesion here considered through certain old ankle fractures that came to me for reconstructive operation — cases that presented extreme backward displacement of the foot, with the condition herewith sketched.

I had not previously met such cases and could find no description to fit them.

From that time I looked for fresh cases—and found them—as will be discussed presently. Most of these cases were under my care.

Quite a number of the cases and plates referred to here, however, have been from those services of the City Hospital with which I have no direct connection.

The frequency with which this lesion has been overlooked and left unreduced by skilled surgeons (despite good roentgenograms) seems to me an additional reason for erecting a separate class for it.

Not only is this lesion not a simple variant of Pott's fracture, but any attempt to treat it like a Pott's fracture ends (in a large percentage of cases) in serious disaster.

A Pott's fracture or an "inversion Pott's" is bad enough, with the two sides of the articular mortise gone; but when we have the astragalus driven clear back of the mortise and deprived not only of *lateral* support, but of any *vertical* bearing as well, the condition is apt to be hopeless unless properly handled.

If the foot and leg rest on the heel, of course the tendency is toward spontaneous reduction; but this occurs only in a portion of the cases: in many, the displacement resists even a considerable force directed toward its reduction.

Such a case, unrelieved, must end in a new joint between the tibia and the forward slant or neck of the astragalus, with limited dorsal flexion, and without any precise support at the sides.

Having seen such results, I can not speak well of them.

Back in 1904-7, among the cases sent to me for reconstruction of damaged ankles, were three absolutely crippled ankles with backward displacement of the foot that distinctly belonged to this type.

They were repaired fairly well by combining a bimalleolar osteotomy (with deliberate forcible rupture of most of the ligament) with the preparation of a new concave joint surface on the tibia with chisel and curet (approximately at the normal site) —a concavity into which the displaced astragalus was shifted forward approximately into its former position. The cases all recovered improved if not normal function.

After these cases had been dealt with, I was on the alert for fresh cases, and found them, and am still finding them.[3]

In 1908, A. H., a student of the Massachusetts Institute of Technology, was brought into my office with an ankle smashed and luxated backward and outward. Obviously, this was the case I had been looking for. The fracture of the fibula and the tearing away of the internal malleolus were obvious; the foot was also luxated backward (and in this case outward as well). Reduction under light anesthesia was easy. Roentgen-ray plates taken shortly after showed a fragment broken off the posterior articular face of the tibia.

This patient got an almost perfect ankle.[4] The Roentgen ray showed a wedge from the tibia, then already reduced, that had been displaced backward with the luxated foot; both malleoli were fractured.

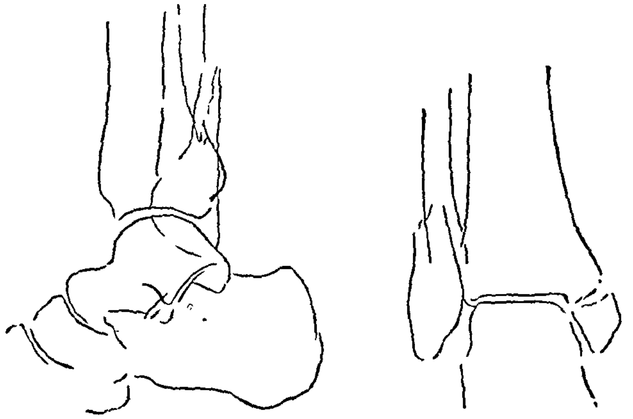

Fig. 4.—Same case as shown in *Figure 3*, after reduction. From roentgenograms taken four days after those shown in *Figure 3*.

The other fresh cases were almost identical with this one.

The worst of the displacement is often dealt with before the surgeon sees the case. It is, moreover, unjustifiable for the surgeon to wait to get pictures before reducing so painful a luxation as is the one under consideration.

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[3] Four have come to hand since this text was written.

[4] I kept track of him for a few months only, through Dr. Walter Baer of Baltimore. The Roentgen-ray plates the patient took to Baltimore, and I have been unable to recover them.

The illustrations and the appended legends really tell the whole story.

We are dealing with an injury in which the dislocation backward is the important lesion.

This displacement once corrected, we have (substantially) a bimalleolar fracture.

Unless we recognize it and reduce it, we have to reckon with the meanest and most serious lesion that occurs at the ankle.[5]

MECHANISM

A twist is usually given as the cause of the injury.

One patient misstepped the edge of a mat in wrestling; one did the same thing in gymnasium "tumbling;" one twisted her foot outward as she stooped from her chair to pick up a rolling spool, a rug slipping under her foot; another, in walking, twisted her foot out on the edge of a rug that slid, etc.

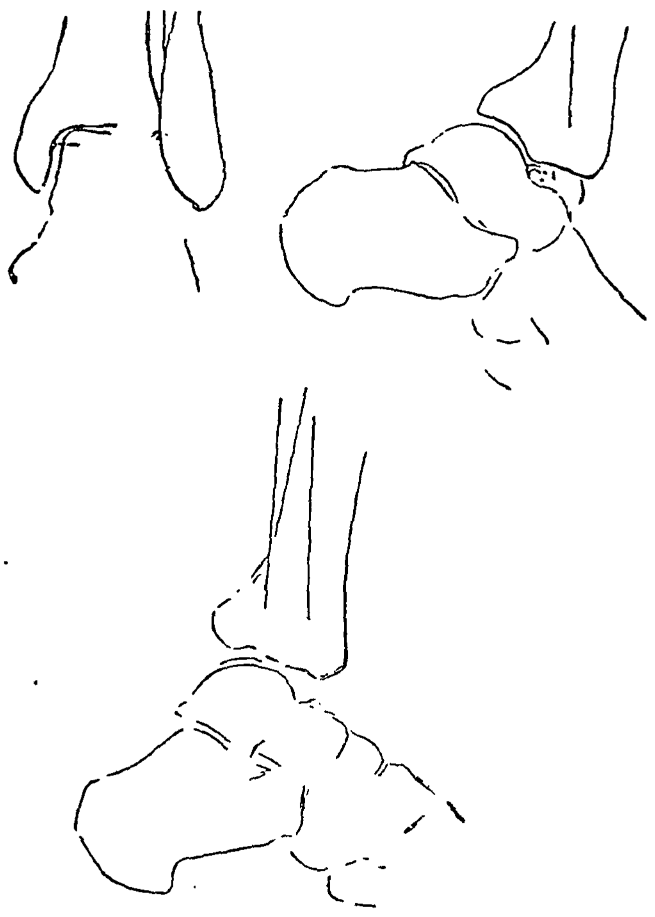

Fig. 5.—Old case. End-result of poor treatment shown in the two upper tracings. Below is shown the lateral view of the imperfect, but sufficient, operative reduction. The clinical result in this case (as in several others of the series) was markedly better, even than the plates suggest.

Apparently an outward and backward twist of the foot is usual.

Apparently the break is often sustained while weight is borne on the ball of the foot, not on the flat foot surface.

A disproportionate number of these cases have been encountered in private practice, which means only that the lesion is not, as a rule, the result of industrial accidents.

TREATMENT

Reduction is simple if the lesion is understood.

All that is called for is forward traction, with the muscles relaxed in moderate plantar flexion; reduce so, and then lock the reduction in maximum dorsal flexion. Hold in plaster.

Results are bad if the lesion is not understood, unless spontaneous reduction has occurred.

If reduction, spontaneous or operative, has been accomplished, repair is prompt, and the results are excellent—in no way worse than in Pott's fracture.

The after-treatment is that of Pott's fracture, save that early mobilization is absolutely essential, and no weight should be borne on the foot for at least seven or eight weeks.

The important thing is to know, and to be on the lookout for, this common and neglected lesion. Given an understanding of what we are dealing with, the rest of the story is simple. But it is important to know that the lesion does occur, to be on the lookout for it, to recognize it, and to deal with it intelligently.

520 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

Dr. J. D. Griffith, Kansas City, Mo.: The most interesting feature in Dr. Cotton's cases is the distinct line between this form of fracture and what he outlines as the genuine Pott's fracture. I have found in my little work at home that there is a fracture which we have ordinarily termed Pott's fracture that we cannot get to stay in position. As I did not know of Dr. Cotton's extreme dorsal flexion, I could not use that; but I have used this method several times in reducing these fractures and maintaining them, whereas in Pott's fracture, rotation inward, almost varus, of the plantar surface of the foot will generally give a good clinical result. These cases require straight-out extension first. Otherwise, one cannot do anything with them; and I cannot yet understand the reason why. I have not been able to determine it. If Dr. Cotton brought that reason out in his paper, I did not get it. Therefore, I ask him to explain it. These are the cases in which we get shortening after a number of months. The patient comes in and says, "I was fixed up, but I cannot use the leg"; and by measurements and roentgenogram one finds that the tibia is rubbing on the back part of the astragalus, instead of in front. These cases are hard to get at; after six or eight weeks I have tried two or three times before I could get any good result, and then, not a perfect one.

Dr. Gwilym G. Davis, Philadelphia: The trouble that I have found in fractures around the ankle is, first of all, in reposition. Dr. Cotton did not give the details regarding his after-treatment; but in attempting reduction, one method of rendering it easier is to place the leg in the Pott's position. The difficulty in some instances seems to be due to the tension of the Achilles tendon. By placing the leg on its outer side and flexing markedly at the knee, you relax the tendon. Some ankle fractures, in which replacement is difficult, can be replaced when the Achilles tendon is so relaxed. In still more difficult cases, it is a justifiable procedure to do a tenotomy. That seems to relax markedly the structures around the ankle and enables us to make a reposition. Otherwise, it is extremely difficult, or almost impossible. What are Dr. Cotton's views concerning the advisability of doing this in certain cases.

Dr. H. W. Orr, Lincoln, Neb.: Dr. Cotton has rendered the section a real service by calling attention to the necessity for a more careful classification of these cases. To me, however, one of the most important things he said was in emphasizing the necessity of reposition of the fragments as nearly complete as possible. I have had occasion, as we all have, to attempt to patch up bad results of this sort; and it is usually because the surgeon or the general practitioner has neglected roentgenoscopy in confirming the replacing of the fragments. I have sometimes used to advantage the position that Dr. Davis recommends and have found that when careful manipulation failed to replace the fragments, they could be molded into place by the tips of the fingers.

Dr. John Prentiss Lord, Omaha: Dr. Cotton has the secret of greater success in the future of these cases.

---

[5] Nothing above or below the ankle joint proper is more troublesome, unless we except astragalus and calcis lesions.

We should begin to look for them and we will surely find that these fractures of the ankle are often atypical. The common fault has been to call everything Pott's fracture, with the result that the treatment given to many of them is wholly inadequate in view of these more recent facts. A method for the replacement of small fragments that I think is not very commonly used has been of assistance to me in some of the old cases. In these conditions the small fragments have infiltration about them, and partial union which resist ordinary methods. An open operation may sometimes be avoided by the use of an awl or drill, with which to enter the fracture area and push the fragments about, just as wanted. Then, by properly checking with the Roentgen ray, we can ascertain when we have the fragments in the best position.

Dr. W. Russell MacAusland, Boston: Will Dr. Cotton explain the surgical details of his treatment in a case of six months' duration?

Dr. F. E. Peckham, Providence, R. I.: It would be well if more attention were paid to the Roentgen ray in these cases. The general practitioner is apt to fix the fracture in the best way he can clinically; and if it looks pretty well, he thinks that it is all right. That, I think, is the reason for the bad after-results. To my mind, such a paper as this would tend to increase the use of the Roentgen ray, and thus allow us to obtain accurate knowledge. I had a similar fracture some years ago, in which both malleoli were broken, leaving a spicule of bone sticking into the astragalus. The result was that at every step the patient took, she felt as if a tack were sticking into the bone. Although a roentgenogram had been taken and many physicians had examined it, the woman was still on crutches at the end of two years. The removal of the spicule stopped the pain, but reconstruction work was necessary—an osteotomy of both malleoli, to place the ankle in good position. She now has a useful foot with some limitation of motion. Dr. Cotton's ideas with regard to the after-treatment and his suggestions have changed my own ideas somewhat. Will he give a brief statement of his views as to the after-treatment?

Dr. D. B. Phemister, Chicago: I have seen about half a dozen of these old and neglected cases from one to three years after the fracture occurred. All were in bad shape. After from nine months to a year, bony union occurs. This posteriorly displaced fragment is then fixed in its old position and an imperfect articular surface is produced. In one case, two years old, I cut down and reduced the astragalus, placing it in the anterior articular surface, left the posterior prominence, and got a bad result with very little improvement. In the second case I did a remodeling, and there I got a bad result—or, rather, not a good ankle. It has occurred to me that perhaps the anterior surface of the tibia could be chiseled away, this posterior, newly-formed articular surface left, and then a supramalleolar osteotomy done. The foot could then be thrown forward, so that the line of force would fall on top of the astragalus, and a good result obtained in that way, as Dr. Cotton has obtained it in Pott's fracture with outward displacement. Has Dr. Cotton treated any cases in that way?

Dr. F. J. Cotton, Boston: Answering Dr. Griffith's question about the deformity, the trouble is that no ligaments and no tibial surface are left that are useful. Even after reduction under ether, unless the straight-out extension of the foot is made first, the astragalus may be driven up against the articular surfaces, and the whole thing may go back with astonishing force. That is the reason for the recurrence of the deformity. I was afraid Dr. Davis would get the point confused. These cases are not Pott's fractures. They are a little like them, but are distinct from them in causation and in the way in which they should be handled. About the question of position, I would say that I use the one Dr. Davis spoke of, and usually flex the knee somewhat in carrying out ankle reduction. With regard to cutting the tendon of Achilles, I have done that in tarsal fractures, but I dislike to do it, because a certain amount of atrophy is caused, and it takes a while for the function to come back. In traumatic cases one has trouble in getting function anyway. Another reason why I dislike to do this cutting is that in putting the cases up in dorsal flexion, it is the Achilles tendon that is depended on. Some cases, however, cannot be treated without open operation, which is undesirable. If one can avoid it, I should say that it is better to do so. With regard to Dr. Lord's statements, I have used a drill or awl and left it in to pin the fragments with, but I have never used such an instrument to drive them about. That point is interesting. Dr. MacAusland asked a question about the treatment in old fractures. I have done three things in my cases. In most of them I made an incision outside and inside. Then, after a section of both malleoli above the joint-level, I loosened up the whole joint, and then cut out, if necessary, a fresh joint-surface on the front part of the tibia to slip the astragalus into. This gives a little shortening; then the foot can be brought down and forward and things placed where they are wanted. That is what I have done in most cases of ankle-reconstruction. In one case in which the trouble was not so much loss of dorsal flexion as an enormous callus, I dug out most of the posterior fragment and set the tendons in a new sheath. In another case I cut away the front edge, but did not do the supramalleolar osteotomy, and got a pretty good foot. As to Dr. Peckham's remark, there is no question that the Roentgen ray should be used more carefully; but if you once get the pathology in your mind, there is no difficulty in making the diagnosis without it. In a great many cases you get along better if you do reduction promptly because there is a good deal of reaction. I want to emphasize that these cases are not Pott's fractures. They ought to be considered as a different class. If they are so handled the result is all right; a good many are not treated properly because this has not been recognized.

THE AUTONOMIC RECIPROCAL ACTIVITIES OF BRAIN AND VISCERA [*]

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A decade has now passed since Langley and the English School contributed to our knowledge of nervous anatomy and physiology a comprehensive plan of the structure and workings of that part of the nervous system which supplies the smooth muscle fibers of the body, the cardiac muscle and the glandular tissues, and to which they gave the broad term "autonomic system," so called from the fact that it acts independently of the cerebrospinal system. Yet there still seems to be confusion not only in the nomenclature, but also in the interpretation of the many experiments that have been made by various investigators in this field of research. We have, for example, the term "vegetative" used by the Viennese School instead of "autonomic" for the entire system of ganglia and nerves and end-organs — *vegetative,* because through its means the normal continuity of life and of the vital functions is preserved. The representatives of this school are Eppinger, H. H. Meyer, Gottlieb and Hess. Since the popular term "sympathetic" is misapplied to the system and its different parts indiscriminately, it would be well perhaps to sketch rapidly the anatomic and physiologic characteristics of the autonomic system, adopting the classification of Langley.

The entire autonomic system is divided into various parts, depending on the position of the cells of origin of the nerve fibers of the system in the cerebrospinal axis. These cells of origin, termed by Edinger, Jacobsohn and others nuclei sympathici, are found in certain definite areas of the brain and cord. Corresponding with these areas, then, we have the following divisions of the system:

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[*] Read before the New York Neurological Society, April, 1914.

1. Midbrain autonomic division, consisting of the cells with their axons which emerge from beneath the superior corpora quadrigemina supplying the iris and ciliary muscle.
2. Bulbar autonomic, of which the fibers emerge from beneath the floor of the fourth ventricle to pass out with the seventh nerve, nervus intermedius, ninth and tenth nerves, to supply the vessels and glands of the mouth, pharynx, nose, esophagus, stomach, small intestine, part of large intestine, trachea and lungs.
3. Thoracic autonomic, or sympathetic system proper, arising from the sympathetic cells of the lateral portion of the anterior horns of the spinal cord from the first thoracic to the fourth lumbar segments, and passing out by the white rami to the gangliated cord and its connections to supply the skin, arteries, muscles, glands, abdominal viscera and internal generative organs.
4. Sacral autonomic, leaving the cord from the first to the third sacral segments as the pelvic nerve, to the ganglia of the anus, rectum, descending colon, bladder, urethra and external genitals.

The fibers, as they leave their cells of origin in the cord or brain, continue their course until each one arrives at a ganglion. In this ganglion, the terminal arborizations of each fiber, or of its branches, are connected with one cell for each individual fiber, and no more than one. These original fibers from the central system to a ganglion are known as "preganglionic" fibers. The axons arising from the ganglionic cells wend their way to the peripheral end-organs of various tissues, and never, under any circumstances, pass to other cells of the same system. Therefore, there are no commissural fibers in the autonomic system. These secondary fibers from ganglion cell to the periphery are called "postganglionic" fibers. The mechanism of ganglion cell and arborization of preganglionic fiber, together with the hypothetic intervening membrane, is known as the ganglionic synapse.

There are two great gangliated cords, situated on either side of the vertebral column, consisting of a series of ganglia connected by short intervening cords. These two gangliated cords extend from the base of the skull to the coccyx. Superiorly they connect with plexuses that enter the cranial cavity, while inferiorly they converge on the sacrum and terminate in a connecting loop on the coccyx. The ganglia of the gangliated cord are known as vertebral ganglia, while those of the great plexuses more peripherally situated are called prevertebral ganglia.

The short cords uniting the spinal nerves with the ganglia and fibers of the autonomic system are called the rami communicantes. The white ramus communicans is composed largely of fine medullated fibers passing from the spinal nerves to the gangliated cord, and not from all the spinal nerves, but only from those from the first thoracic to the fourth lumbar segments of the cord. The gray ramus, on the other hand, is composed for the most part of pale, non-medullated fibers, passing from the gangliated cord to all the spinal nerves, at every level. At the next anatomic fact we have a curious resemblance between the two extreme divisions of the autonomic system. It is that the sacral visceral nerves correspond to white rami communicantes, for they pass directly to the visceral ganglia of the prevertebral plexuses, without connecting with the gangliated cord. The similar condition exists with the craniobulbar autonomic division — that of the vagus — for here also the visceral branches of the vagus, the glossopharyngeal, the facial and the short branches of the oculomotor to the ciliary ganglion pass to the visceral ganglia directly, as white rami communicantes.

There are other points of resemblance between these extremes to be seen directly. Thus the craniobulbar and sacral divisions are local in their supply, whereas the thoracic autonomic, or sympathetic proper, is almost universal. That is, each of the first two has its area of control distinct from the other, anatomically, while the sympathetic sends fibers not only to its own territory proper, but in addition, it also sends fibers to the same structures as the other two, so that the tissues supplied by the craniobulbar and sacral autonomic have a double innervation, while those supplied by the sympathetic have only the one. Where there is this double supply, the two kinds of nerves are not necessarily opposed; but if their effect is different, then all the central strands of one system have one effect, and those of the other system have one and the opposite effect.

With this short explanation of the chief anatomic and physiologic characteristics of the autonomic system, let us proceed to a consideration of the reciprocal effects of the activities of the parts of the system presiding over the viscera, and their relation to visceral activity. It may not be amiss to consider first the curious conditions that obtain in the lowest form of vertebrate life which, in the course of evolution, in a great increasing series of complexities, led to the seemingly hopeless intricacies in the economy of the highest type, man. In the amphioxus as the prototype, we find the following interesting and important features:

The development of the amphioxus from the fertilization of the egg to the end of the embryonic stage, and thence through the growth of the larva, can be studied microscopically with comparatively little difficulty. This has been done in late years especially by Hatschek[1] of the university of Prague, and in earlier years by Kowalevsky of St. Petersburg.[2] Of interest to us in this development of *Amphioxus lanceolatus* is simply the origin and evolution of the primitive nervous system, with its earliest connections to other parts of the living structure. The growth of the edges of the neural furrow from the turning in of the epiblast begins at the *posterior* end, at the position of the gastrula mouth, and advances to the anterior end. The remains of the gastrula mouth continue as an opening between the archenteron and the neural canal — a condition typical of all vertebrates — termed the neuro-enteric canal. At a later stage of development it is at this point that the anus perforates, and at the same time the communication between the neural canal and the archenteron is interrupted. These two canals have therefore, as their point of connection, the morphologic posterior end. This primitive nervous structure and the end of the alimentary canal are thus closely related in the evolution of the animal. One other point in interest for us is the double service rendered by the mouth to the animal when fully developed. All observers agree that the animals emit their sexual products through the oral aperture, the male the sperm, the female the eggs, so that the nervous control of the ingestion of food and of the emission of sexual products must be closely related.

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[1] Hatschek, B.: Amphioxus and its Development, translated by Tuckey, 1893.

[2] Kowalevsky, A.: Entwicklungsgeschichte des Amphioxus lanceolatus, Kiev, 1870.

When we arrive at an extremely high vertebrate type, the mammal, we find curious resemblances in the results of physiologic and pathologic experimentation to these observed characteristics of amphioxus. At the risk of much repetition, I should like to refer to my experiments on cats in this connection. In one series of experiments, I diminished the influence of the craniobulbar autonomic,[3] that is, the vagus, on the viscera, by tying off the vagus, and at times both vagi, below the esophageal plexus in the thorax. This limited the effect, if any, to the abdominal viscera entirely. After some months, the animals, which seemed none the worse for this deprivation, were killed and among the findings were the following: The stomach was enlarged and thickened, and the peptic glands were largely increased in number. Of greater interest to the present subject, however, was the unexpected discovery of the great increase both in length and caliber of the colon and rectum. The normal length of the large intestine in cats, from the ileocecal junction to the anus, is on an average 200 mm. On the operated animals the length of the intestine was uniformly increased to 300 and 325 mm., and its circumference, which normally is about 35 mm., was increased to 65 mm. Therefore it is a fair inference that any inhibition exerted by the brain on the vagus nerve impulses to diminish their intensity produces profound effects in the vegetative life of the cells of the alimentary canal, causing a hyperplasia. The close connection which we saw existed between the primitive neural canal of the amphioxus and the posterior end of the archenteron has apparently its counterpart in the highly developed organic structure of the higher class, mammalia. And we shall see later on that in the genus homo, cerebral activities that depress the vagus nerve cause physiologic effects on the intestine that in the light of what has just been presented are readily understandable.

From the short description of the anatomic characteristics of the autonomic system which has just been given, we see that the viscera generally have a double nervous supply, the one from the sympathetic via the vertebral and prevertebral ganglia, and the other from either one or the other of the autonomic divisions. These two sets of nerve fibers convey a continuous stream of current to the tissues; but from the probability that their end-organs in the tissues are different from one another, class for class, their effects on the viscus are of a balancing character. As a result, the activity of the organ is commensurate with the work that in a given case is required of it, the repair and growth of its cellular elements controlled, the blood-supply properly limited; and all these various activities are constantly at work, independent of our will, and indeed, largely of our consciousness. But such a compensating balancing mechanism is dependent on many factors other than these, and yet on factors that are influenced *indirectly* by the will and consciousness, so that if one set of nerve fibers is depressed, the other overacts its part, and the converse. But it would seem that if one set is entirely destroyed, the other, having no physiologic antagonist, ceases its influence. In the experiments cited, the vagus nerve was never completely severed, but simply *partially* destroyed by a moderately tight ligature. In the cases of complete vagus section as carried out by Langley, Cannon, Pawlow and Schiff, these hyperplasias were not produced.

Now, we can produce conditions in the various parts of this autonomic system comparable to such a pressure neuritis in its temporary effects, by means of drugs, psychic disturbances and various physiologic stimuli. Let us take up the effects of drugs and psychic disturbances solely. The Viennese School, Eppinger, Hess, H. H. Meyer, Gottlieb and others, have demonstrated that certain groups of poisons have, with some limitations, selective effects on the end-organs, or synapses, or central cells of either system. And the group of these agents that stimulates the one system depresses the other. So we have the so-called cholin group, and pilocarpin and physostigmin, all acting as *stimulants* to the autonomic nerve ends, while atropin with its family *depresses* the same ends. The central stimulants of the two systems are picrotoxin for the autonomic, and cocain, caffein, atropin and thermin for the sympathetic, while the corresponding depressants are botulismus toxin and other decomposition products for the autonomic, and morphin, chloral and the antipyretics as sympathetic central depressants. Epinephrin is a stimulant of the sympathetic ends and centrum both and a depressant to the autonomic.

With these means at our disposal, we are in a position to determine generally the interrelation of the nervous system and the organs it supplies. For example, we administer the autonomic stimulant, pilocarpin, to a patient, and if his autonomic system is functionating normally, we soon observe the tissues supplied by its nerves overact, and he shows myosis, paralysis of accommodation, peristaltic paralysis, bladder contractions, asthma due to bronchial spasm, bradycardia, pallor of the skin, and an increase of glandular secretion throughout the body, notably of sweat. These manifestations are accompanied by cerebral manifestations such as psychomotor inhibition, fear and depression. Conversely, in patients that present depressions, with diminished psychomotor activity, we find an equivalent to an autonomic stimulating effect, in that they have paralysis of peristalsis, slow pulse, cold and clammy skin and subnormal temperatures.

If atropin is given to this person in full doses, the picture changes entirely, for atropin stimulates the sympathetic and depresses the autonomic. Here we see a relaxation of the spasmodic action of the smooth muscle fibers, so that peristaltic action is increased, the bronchial spasm relieved, the skin becomes dry and warm, the heart regains and even exceeds its normal rate, the pupils become large and mobile, and the whole picture is one of intense activity. Mentally, the person is alert, with great psychomotor activity, flushed face, and with his initiative restored and increased. Conversely, the emotional excitement, the intense activity, the euphoria, exhibited by certain psychic disturbances is accompanied by the visceral manifestations of sympathetic stimulation: namely, increased heart action with a feeling of bodily warmth, enlarged pupils, excessive appetite, and increased peristalsis.

These two examples may be taken as indicative of the complementary activities of the two systems. How it comes that cerebral activity is transferred to the cells of the sympathetic nuclei in the cord, or vice versa, is unknown; for while Bechterew and others have gone so far as to state that there are certain areas of the cortex which control the autonomic activities, especially those of erection, of the production of sweat and of intestinal peristalsis, yet proof is wanting. Müller is of the opinion that even the will is powerless to influence the functionating of the autonomic system.

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[3] Timme, W.: Nervous System in Hyperplasia, Jour. Nerv. and Ment. Dis., May, 1913.

In opposition, Lewandowsky cites the fact of the voluntary emission of urine. Yet, as a matter of fact, how often do we see patients who, though their nervous and urinary system are apparently intact, cannot void urine even if they will?

There seems to be some intermediary between the will and the autonomic function. The following case is illustrative: Some time ago there came a man to the Charité in Berlin, who could cause the pilomotor muscles of his arms to raise the hair of the arms, and produce goose flesh at will. He could voluntarily cause his pupils to dilate and contract, and he had some control over the rapidity of his heart. He was presented as a case of "voluntary autonomic control" —a manifest contradiction in terms. When closely questioned, he admitted that the effects were produced not immediately by his will, but always by the intermediation of some association called into being by him. Thus, when dilating his pupils, he always imagined himself looking into space, under which conditions the pupil does dilate. For the goose-flesh effect, he would picture to himself his arm plunged into ice water, and the result ensued.

We all know that various associations produce autonomic effects without our will, and it is reasonable to suppose that if we can recall these associations through our will, the same autonomic effects will be produced. Joy causes a rapid heart action; shame is accompanied by blushing; fear sends the blood from the face and lips, and dries the mouth; psychic irritation may cause vomiting, or asthma, or diarrhea, and sexual excitement is followed by erection. Any of these effects can be produced by calling up the associations which accompanied their presence at some previous time, so that only indirectly can the will control the autonomic mechanism — a far different matter from the voluntary absolutism over the cerebrospinal. This is of far-reaching importance, for as our moods depend largely on the varying adjustments of ourself to our environment, on the one hand; and as these moods are made up of such components as were just mentioned, joy, fear, anger, shame, on the other, we see that the harmony of the activities of the internal organs depends partly on our proper adjustment to our surroundings. Our will, as such, can help us not at all to overcome our difficulties in the internal economy, but only so far as it can make our voluntary activities harmonize with their environment. Reciprocally, confusion in the internal economy, by a disturbance of the autonomic system, unless thoroughly compensated by the opposing sympathetic, produces changes of blood-pressure, differences in the ratio of the quantities of the various hormones in the blood, and changes in secretion; all of which influence the activity of the cortex, causing finally the different moods which make our adjustment to our surroundings so difficult. And now we find ourselves in an extremely vicious circle. The extrication therefrom is the problem of modern medicine.

But there is one peculiar condition to which I should like to call attention. It is that when disease, or perverted function of either the spinal tracts or centers or in the brain itself causes a cessation or diminution of the reciprocal activities between the brain and the particular viscus in question, then the activity seems to be transferred to some other viscus and a substituted result follows. Thus I have under my care a patient suffering with spinal lues. He is impotent. Yet, when he is in psychosexual excitement, he invariably vomits, and the tension under which he was is immediately relieved thereby. A second patient, whose sexual development is far backward and who does not comprehend the nature of reproduction, is nauseated whenever she is in the company of boys of her age, and frequently vomits under a little added excitement. As she herself explains it, the vomiting relieves her mind. We need recall only the condition in the amphioxus previously described for an analog.

Many attempts have been made to trace anatomically the path of influences from the cortex and other cerebral areas to the bulbar and spinal sympathetic nuclei, and on the other hand the track of the painful and other sensations from the viscera to the cortex. But the sum of our knowledge at present is merely that there exist certain areas in the brain whose stimulation produces certain activities in the viscera. For example, there is a point in the hypothalamic region which, when irritated, produces dilatation of the pupil (Kreidl). The floor of the third ventricle contains an area which partially controls the sugar tolerance. Bladder contractions may be called forth by stimulating a part of the hypothalamus; but these results are quite isolated and want further proof. As for tracts of conduction for these impulses, we know simply that the cervical sympathetic and the superior cervical ganglion are the carriers of the current from the cerebrum and midbrain to the ciliary muscle influencing the tone of the pupil. And that is all. Müller believes that there is the same possibility of changes occurring in the excitability of the medulla and cord as occur with the changes in mood in the psychic centers, and thus we can understand in a measure the production of effects in the viscera through a disturbance of their spinal centers. The other question, the manner of conduction of painful impulses from the viscera to the cortex, is explained by many — Sherrington, Müller, Head and others — as due to the process of "irradiation" from the termination of the afferent autonomic fiber in the spinal ganglion to the spinal afferent nerve in juxtaposition to it, and thence to the cortex. A new theory of the function of the nodes of Ranvier, in which these nodes serve as channels of communication between highly charged fibers and those less markedly so, will perhaps explain the difficulty underlying the meaning of the term "irradiation."[4] The carrying of the current by spinal nerves causes presumably the projection of the pain area to the peripheral zone supplied by these nerves — "Head zones."

We have now seen in the lowest vertebrate type, the amphioxus, in the mammalian cat, and in the human being, based on embryologic development directly observed, on physiologic and pathologic experimentation, on clinically observed facts and on pharmacologic experience that there is a close relationship between the activity of the brain and that of the viscera, and that in spite of the autonomicity of the one and the primacy of the other, each is complementary to the other in a broad sense, and depends on it for its own normally functionating existence.

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[4] Timme, W.: Theoretical Considerations of Node of Ranvier, Jour. Nerv. and Ment. Dis., February, 1913.

Truth or Happiness.—Henri Poincaré starts one of his books with the remark that the chief aim of man is to search for truth. Nine people out ten will tell you that the chief end is to search for happiness. These are the two points of view and they split up the whole world into two kinds of people.—*Scientific American.*

RELATION BETWEEN CHLORID RETENTION, EDEMA AND "ACIDOSIS" *

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It has been noted by different authors that in edemas of various types, as in those associated with heart disease, certain types of nephritis, etc., there is evidence of chlorid retention in the body. From this it has been quite generally concluded that in these conditions the kidneys are unable to eliminate chlorid (or, as ordinarily stated, are unable to eliminate sodium chlorid) and that its retention in the body is responsible for the edema. On such reasoning has been based the widely approved therapy of sodium chlorid restriction, and since a lessening of edema has at times been observed in patients following such restriction, the argument as a whole has been regarded as entirely sound.

Against it have stood, on the one hand, the failure of good observers to see any clinical improvement following careful efforts at applying the principles of sodium chlorid restriction, and on the other, the experimental facts developed in my studies of water absorption by protoplasm. According to these studies the hydrophilic (protein) colloids of the body and their state are chiefly responsible for the amount of water absorbed and held by any cell, tissue or organ under physiologic and pathologic circumstances. There exists a complete analogy between the absorption of water by simple protein colloids and by living cells. The presence of any salt, including sodium chlorid, reduces the amount of water absorbed by any (protein) colloid, and similarly the amount held by tissues either under normal circumstances or in states of abnormally great hydration (edema). These considerations have compelled the conclusion that sodium chlorid restriction as a scheme of therapy is not only wrong in principle, but also harmful in practice.

It is the purpose of these paragraphs to indicate why sodium chlorid retention and edema go hand in hand. *Sodium chlorid retention is not due to an inability of the kidneys to eliminate it, but to a change in the proteins (and other colloids) of the body as a whole. Sodium chlorid retention does not lead to edema, but the changes which lead to edema and to sodium chlorid retention are the same, consisting, in the main, of an abnormal production and accumulation of acid in the body.*

Proofs for this may be brought from both a clinical and an experimental side. So far as the clinical aspects are concerned, it is sufficient to emphasize that sodium chlorid retention is a constant accompaniment of all pathologic conditions in which there is evidence of an abnormal production and accumulation of acid in the body, as betrayed through a persistently high hydrogen ion or titration acidity of the urine, through an increased hydrogen ion acidity of the blood, an increased hydrogen ion acidity of the saliva or other secretions from the body, through a high relative or absolute ammonia excretion in the urine, a low carbon dioxid content of the blood or alveolar air, etc. Because such acid intoxication is exceedingly common in many different clinical states it is readily apparent why sodium chlorid retention has long been observed in pneumonia, in many of the infectious diseases, in the pernicious vomiting and intoxication of pregnancy (eclampsia), in the cyclic vomiting of children, in diabetes, in carbohydrate starvation, in the severer types of the circulatory disturbances, in the severer anemias, in poisonings with arsenic, lead, phosphorus, chloroform, ether and alcohol, and in the generalized parenchymatous nephritides when accompanied by a generalized edema. *The water retention likely to be observed in all these states is not secondary to the sodium chlorid retention, but both are due to the existent acid intoxication. The presence of acid in abnormal amount in the body not only increases the hydration capacity of the (protein) body colloids, but also increases at the same time their capacity for holding chlorid.*

Experimental proof of this may be easily brought. When protein (carefully washed fibrin or gelatin) is thrown into a salt solution it not only absorbs water from the salt solution, but salt as well. On the addition of acid, the amount of water absorbed is increased (the protein becomes "edematous"), but the absorption of salt is also increased. The presence of acid, in other words, leads not only to greater swelling, but also to sodium chlorid retention. Experiments were made by placing weighed amounts of fibrin or gelatin in definite volumes of neutral or acidified sodium chlorid solutions of definite strength kept in carefully stoppered flasks. After varying periods of time the solutions about the swollen protein were filtered off and the chlorid in them determined by titration with silver nitrate according to Volhard's method. The following experiments suffice to illustrate the values obtained:

Experiment A.—A dry gelatin plate weighing 0.813 gm. is placed in each of the following solutions:

1. 75 c.c. 1/6 molar NaCl + 25 c.c. H_2O
2. 75 c.c. 1/6 molar NaCl + 25 c.c. N/10 HNO_3

Titration (of an aliquot portion) of the surrounding fluids nineteen hours later shows the former to contain 0.00303 gm. chlorin (=0.005 gm. sodium chlorid) more than the latter. In other words, the gelatin in the acid solution has absorbed this amount of chlorin (or sodium chlorid) more than the gelatin in the neutral medium. Twenty-three hours later the difference is still more striking. At this time the surrounding liquid in the first mixture contains 0.00606 gm. chlorin (=0.01 gm. sodium chlorid) more than the second; or, conversely expressed, this much more chlorin (or sodium chlorid) has been absorbed by the gelatin in the acid medium than by that in the neutral one.

Experiment B.—Three gm. powdered fibrin are placed in each of four flasks containing, respectively, the following solutions:

1. 85 c.c. 1/8 molar NaCl + 15 c.c. H_2O
2. 85 c.c. 1/8 molar NaCl + 5 c.c. N/10 HNO_3 + 10 c.c. H_2O
3. 85 c.c. 1/8 molar NaCl + 10 c.c. N/10 HNO_3 + 5 c.c. H_2O
4. 85 c.c. 1/8 molar NaCl + 15 c.c. N/10 HNO_3

Nineteen hours later the excesses of chlorin absorbed by the fibrin in the acid solutions over and above the chlorin absorbed in the neutral mixture are, respectively, 0.00303, 0.004545 and 0.010605 gm.; or, recalculated in terms of sodium chlorid, 0.005, 0.0075 and 0.0175 gm.

Experiment C.—Three gm. powdered fibrin are placed in each of five flasks containing, respectively, the following solutions:

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* From the Joseph Eichberg Laboratory of Physiology in the University of Cincinnati.

1. 40 c.c. 1/6 molar NaCl + 10 c.c. H_2O
2. 40 c.c. 1/6 molar NaCl + 2.5 c.c. N/10 Lactic acid + 7.5 c.c. H_2O
3. 40 c.c. 1/6 molar NaCl + 5 c.c. N/10 Lactic acid + 5 c.c. H_2O
4. 40 c.c. 1/6 molar NaCl + 7.5 c.c. N/10 Lactic acid + 2.5 c.c. H_2O
5. 40 c.c. 1/6 molar NaCl + 10 c.c. N/10 Lactic acid

Twenty hours later the excesses of chlorin absorbed by the fibrin in the acid solutions over and above the chlorin absorbed in the neutral mixture are, respectively, 0.0010605, 0.0037875, 0.006969 and 0.0113625 gm.; or, expressed in equivalents of sodium chlorid, 0.00175, 0.00625, 0.0115 and 0.01875 gm.

It has been customary in the modern writings on chlorid retention to assume that it is retained as sodium chlorid, and it is for this reason that in the experiments thus far detailed we have recalculated the value of the chlorid retention in terms of sodium chlorid. Chlorid is, however, better retained by acidified protein than by neutral protein even when it is offered in another form. Experiment D demonstrates the increased chlorid absorption under the influence of an acid in the case of calcium chlorid.

Experiment D.—Three gm. powdered fibrin are placed in each of five flasks containing, respectively, the following solutions:

1. 40 c.c. 1/6 molar $CaCl_2$ + 10 c.c. H_2O
2. 40 c.c. 1/6 molar $CaCl_2$ + 2.5 c.c. N/10 HNO_3 + 7.5 c.c. H_2O
3. 40 c.c. 1/6 molar $CaCl_2$ + 5 c.c. N/10 HNO_3 + 5 c.c. H_2O
4. 40 c.c. 1/6 molar $CaCl_2$ + 7.5 c.c. N/10 HNO_3 + 2.5 c.c. H_2O
5. 40 c.c. 1/6 molar $CaCl_2$ + 10 c.c. N/10 HNO_3

Twenty-four hours later the excesses of chlorin absorbed by the fibrin in the acid solutions over and above the chlorin absorbed in the neutral mixture are, respectively, 0.00303, 0.004545, 0.00606 and 0.010605 gm.; or, expressed in equivalents of calcium chlorid, 0.004735, 0.0071025, 0.00947 and 0.0165725 gm.

It would take us too far afield to discuss why chlorid is better retained by protein in the presence of acid than in its absence. It is sufficient to point out that the observed behavior is probably nothing but an isolated illustration of the adsorption of a dissolved substance by a colloid, which, as so frequently the case, is decidedly better when an acid is present than when it is absent. To the adsorption effect may, perhaps, be added a chemical one, for there is some evidence that an acid protein combines chemically with neutral salts in a way that neutral protein does not.

The increased amount of chlorid retained by proteins under the influence of acid is of a magnitude to cover easily any amount ever found retained by patients. Rarely are more than from about 10 to 50 gm. of (sodium) chlorid held in the body. Choosing for illustration Experiment A as a basis for calculation, we note that at the end of nineteen hours the acidified gelatin has absorbed an amount of sodium chlorid in excess of that absorbed by the neutral gelatin amounting to 0.61 per cent. of the original dry weight of the protein. At the end of another twenty-three hours the figure has risen to 1.22 per cent. If we choose the very liberal figure that but one-fourth the normal body weight is dry substance (of which more than 95 per cent. is colloid), this means that a man weighing 75 kg. (165 pounds), developing the ability to retain even 0.61 per cent. more salt is already able to retain 114 gm. of sodium chlorid, or if the higher figure is chosen, twice this amount.

These experiments have also a general biologic interest in connection with the question of the "permeability" of cells to different substances. It is scarcely conceivable that any one will maintain gelatin disks or fragments of powdered fibrin to be surrounded by "membranes," and yet observations of the type described in these paragraphs when made on living cells or tissues are constantly used as "proofs" for the existence of "membranes" about cells and of their alterable "permeability." Thus, it has been maintained that "living" cells are "impermeable" to sodium chlorid and to other salts, but become "permeable" on the addition of acid or of substances which indirectly lead to a production and accumulation of acid in the cells (chloroform, ether, cyanid, etc.). Would any one by similar reasoning maintain that gelatin plates and fibrin flakes lying in a "physiologic" sodium chlorid solution are "osmotic" systems surrounded by "impermeable" membranes which become "permeable" to sodium chlorid when an acid is added?

Perhaps these experiments will serve to illustrate anew the fruitful consequences of the application of colloid-chemical principles to medical and biologic problems. As they have proved adequate in the explanation of the many phenomena characteristic of water absorption by protoplasm they will also explain without contradiction the absorption and secretion of dissolved substances.

THE OCCURRENCE OF EDEMA FROM LARGE DOSES OF SODIUM BICARBONATE

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TOLEDO, OHIO

There are a number of pathologic conditions in which large doses of sodium bicarbonate or other alkalies are indicated. The report of the two cases below, particularly Case 1, may serve to draw attention to an occasional consequence of such large administration of alkalies, which may lead to wrong conclusions if the possibility of its occurrence is not kept in mind. The condition referred to is the occasional appearance of generalized or localized edema in the course of administration of sodium bicarbonate.

Case 1.—Woman, aged 51, was seen first, July 30, 1913. The patient had had diabetes mellitus for several years to her knowledge, and doubtless for some time before its discovery. The condition which I was called to see was a large carbuncle on the back between the shoulders. The urine at this time contained 5 per cent. of sugar. Diacetic acid and acetone were present. The carbuncle was incised and dressed daily with iodin and sterile gauze. The presence of diacetic acid and acetone in the urine precluded the institution of a carbohydrate-free diet and no attempt was made to reduce the carbohydrate intake to a minimum. The infection between the shoulders did not get along satisfactorily, several new boils developed at various points, emaciation was rapid, and the prognosis looked doubtful. The treatment from July 30 to August 15 consisted in a moderate reduction of carbohydrates, an abundance of meats, eggs, green vegetables, cream, coffee and tea. Forty to sixty grains of sodium bicarbonate were given four times daily during this period. The ferric chlorid reaction for diacetic acid remained constant, however. Drowsiness appeared August 15 and went on to a state of semicoma. There were movements in response to stimuli, the patient would swallow when drink was placed to her mouth, there was no response to questions and the sphincters were relaxed. The daily amount of sodium bicarbonate was increased at the first sign of approaching coma until the patient was getting 6 drams by mouth and one or two rectal injections daily, each containing 1 ounce of sodium bicarbonate. It is not possible to say how much of this was absorbed, as the injections were not well retained. The foregoing intensive form of alkaline medication did not prevent the drowsiness from deepening into a state of semicoma. The coma did not become absolute. The patient would swallow at any time, so it was possible to keep up the alkalies by mouth. Edema of the fingers and hands was noted at the beginning of this semicomatose period. The feet and ankles were next involved. The edema increased until the patient presented a condition of complete anasarca —edema of the extremities, face, eyelids, forehead, abdominal wall and back. Definite ascites could not be ascertained. Nephritis, heart, liver or other involvement as a cause for the edema could be ruled out. The condition was recognized and the sodium bicarbonate discontinued. The edema began to decrease appreciably the second day after, and was gone one week after the alkaline medication had been stopped. The patient made a slow recovery from her acidosis, the carbuncle and furunculosis disappeared, the diabetes was eventually controlled by a suitable dietetic regimen, and at the present moment (November, 1914) she is feeling well and attending to her household affairs.

Case 2.—Woman, aged 24, convent nun, was examined in August, 1914. Her complaint was a pain in the epigastric region which had been present nearly every day for one year. A similar condition had existed when she was 17 years old. The pain came on a few minutes after eating and lasted one or two hours. The intensity of the pain varied from a dull ache to a sharp, knife-like pain. It was more severe after the heavy midday meal than after the lighter breakfast or supper. There was occasional nausea in the morning, but no vomiting. The pain was relieved at once by sodium bicarbonate or other alkaline treatment. The usual weight was 154, the present weight 132. The history and examination led to a diagnosis of ulcer of the stomach or duodenum. The patient was placed on an ulcer diet and kept in bed. She was given a powder containing sodium bicarbonate and calcined magnesia and directed to use a level teaspoonful in milk every three hours. This treatment gave her symptomatic relief and its continuance was advised when the patient left the hospital. She was then not seen for a period of three weeks, during which time the foregoing alkaline mixture was used freely and in greater amount than had been advised. The exact amount of sodium bicarbonate which was used daily could not be determined, but was approximately 4 or 5 drams. Examination at the end of this three-week period showed a marked edema of the feet, ankles and the lower part of the legs. The edema was similar in its general appearance and pitting characteristics to the edema of a cardiac trouble, but it could not be explained by any trouble in the heart, kidneys, liver or elsewhere. The possibility of a sodium bicarbonate edema was recognized, the alkaline treatment was discontinued, and without rest in bed, change in her habits, or other therapeutic agent, the edema disappeared completely in three days. (The subsequent history of this patient will not be related, as it does not have to do with the title of this article.)

The treatment of diabetics with threatened acidosis and coma by means of sodium bicarbonate is a common procedure. Staubli and Blum[1] state that such medication may cause an increase in body weight without real obesity because of a watery saturation of the tissues. The body weight rapidly falls when the alkaline medication is stopped. They believed that the sodium bicarbonate was retained in the tissues and attracted water.

E. Pfeiffer[2] has also considered the pathogenesis of sodium bicarbonate edema. He thinks the explanation is to be found in the increased amount of sodium in the tissues. This view is not held by Widal, Lemierre and Cotoni.[3] They do not believe that it is a question of sodium alone or the excessive amounts ingested. They have shown that a diabetic retains chlorids and water under the influence of sodium bicarbonate, which retention is in proportion to the condition of the kidneys and the degree of acidosis.

The property which sodium bicarbonate possesses of producing a chlorid retention, and in marked cases edema, is not peculiar to diabetics. The amount necessary to produce a retention of chlorids has been determined experimentally to be 20 gm. or more daily. This amount is larger than the usually prescribed therapeutic dose in stomach affections, but may be much below the amount given in cases of threatened diabetic coma.

In a general way the chlorid retention is in proportion to the amount of sodium bicarbonate ingested, but that is not the only factor. Cachectic and toxic diabetics, individuals with poor renal elimination, and emaciated subjects rapidly progress to chlorid and water retention, sometimes edema, from doses of sodium bicarbonate which in milder diabetics or individuals in a fair state of nutrition and having good elimination would produce only the "preedemic" state of the French writers. Widal believes further that the sodium chlorid content of the food plays a part in determining the amount of chlorid retention and edema after the use of sodium bicarbonate.

Charcot and Vulpian, and then Hayem[4] called attention to the occurrence of edema or water retention after the administration of sodium bicarbonate to healthy men as far back as 1890. Hayem was able to demonstrate such a retention after the use of from 20 to 30 gm. of sodium bicarbonate daily. This corresponds to Case 2 reported above. More recently, Blum demonstrated the same thing, but thinks that the water retention does not go on to the edema stage in healthy individuals. It is rather difficult to determine this point in an experimental way in healthy persons, because large amounts of sodium bicarbonate given to such persons causes diarrhea, vomiting and other digestive troubles which necessitate the discontinuance of the drug. Blum was able, however, to determine this point with two normal persons. One was a healthy man of 28, who was put on a chlorid-free diet to which was added 12 gm. of sodium chlorid daily. The chlorid balance was determined, and then 40 gm. of sodium bicarbonate was given daily for twelve consecutive days. During this period there was a chlorid retention of 32 gm. and an increase of body weight of 2.5 kg. This chlorid retention and increased body weight disappeared promptly on stopping the sodium bicarbonate. The experiment was later repeated on the same man with identical results, the figures varying but slightly.

Widal, who seems to have given most attention to sodium bicarbonate edema, reports a number of cases.

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[1] Staubli and Blum: Ueber die Rolle von Salzen bei der Entstehung von Oedemen, Verhandl. d. 26 Kong. f. inn. Med., Wiesbaden, 1909, p. 122.

[2] Pfeiffer, E.: Wasserretention durch Natronsalze, Verhandl. d. 28 Kong. f. inn. Med., Wiesbaden, 1911.

[3] Widal, F.; Lemierre, A., and Cotoni: Le rôle du chlorure de sodium dans les oedèmes provoqués par le bicarbonates de soude à dose massive, Sem. méd., 1911, No. 11.

[4] Hayem: Leçons de thérapeutique; les médications, Paris, 1890, Series 2, p. 222.

One case (the others were similar) concerned a much emaciated diabetic of 28 with threatening acidosis. Forty gm. of sodium bicarbonate had been given daily for six days. The dose was then raised to 80 gm. daily, under which treatment his stupor began to lessen. The body weight increased 3 kg. during the first three days of this alkaline medication, and at the end of eight days the increase amounted to 9 kg. Edema appeared at this point and involved the hands, feet, legs, thighs, abdomen and face. The sodium bicarbonate was stopped and in three days the body weight had decreased 6 kg., with disappearance of the edema. The increase in body weight and edema corresponded with a fall in the urinary chlorids from between 18 or 31 gm. daily to 7 gm., the diet being the same. The urinary chlorids then jumped to 35 gm. daily, when the sodium bicarbonate was stopped. Later in an experimental way, Widal was able to increase or decrease the body weight of this patient at will by adding or taking away sodium bicarbonate. A chlorid retention was uniformly found to correspond to the period of increased weight.

CONCLUSIONS

1. Sodium bicarbonate in large doses may cause an increase in body weight which may go on to the appearance of edema.
2. This increase in weight is caused by a retention of chlorids in the body with resultant water retention.
3. The increase of body weight or edema is more likely to appear during the administration of large doses of sodium bicarbonate to cachectic diabetics with acidosis.
4. It can be produced in an experimental way in normal individuals.

237 Michigan Street.

UNHEATED VACCINES

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The purpose of this paper is to encourage the use of unheated vaccines.

The preparation of unheated vaccines, which have had their vegetative powers destroyed by members of the phenol group, has been suggested previously by others. Park and Williams[1] say, "It has lately been suggested that instead of killing by heat the vaccines may be killed by adding, when made, 0.5 per cent. carbolic acid, or 0.25 per cent. cresol compound." This is the only reference I have found, relative to the use of unheated vaccines killed by members of the phenol group.

Crandon[2] gives a summary of the literature on the use of killed and living vaccines, proving conclusively the great advantage of unheated over heated vaccines, as heating even to 60 C. destroys in a great measure their immunizing power.

Two years ago I decided against heating my vaccines, provided I could discover some method of destroying their vegetative powers with less change in their chemical composition than is induced by heat. My choice of germicides finally narrowed down to two: the ultraviolet ray and the phenol group. As yet I have not used the ultraviolet ray. A good method of killing most bacteria I found to be their immersion for twenty-four hours in 0.25 per cent. tricresol solution at 37 C.

TECHNIC

The only liquid used is 0.25 per cent. tricresol in previously sterilized physiologic saline solution. All materials coming in contact with the vaccine, during or after preparation should have been sterilized in advance. The culture medium to be preferred is a 2 per cent. glucose, 6 per cent. glycerol-blood-agar, neutral to — 1 to phenolphthalein. It is sometimes of advantage to run a soft blood medium over a substratum of a more solid medium.

The bacteria are removed from the surface of the culture medium by means of glass rods drawn thin in the Bunsen flame to give them flexibility. The ends of the rods are made sufficiently thick to prevent penetration of the medium. A few drops of the tricresol solution are placed on the surface of the culture and the growth can easily be removed with the aid of these rods, even from a fairly soft medium.

The vaccine is then well emulsified by shaking in a test-tube or flask with beads or broken glass. The emulsion is filtered through sterile paper to remove clumps of bacteria. Sufficient tricresol saline solution is added to bring the minimal dose to 0.05 to 0.1 c.c.

After twenty-four hours in the incubator, the suspension is tested for sterility by inoculating a loopful into a tube of bouillon, a loopful of which is run over each of a number of sterile slants of the medium used in the primary culture. Twenty-four hours in the incubator has been used as the limit of the test for sterility. Objections may be raised against my practice of dividing the vaccine in a number of ampules, before placing in the incubator for twenty-four hours to sterilize, but I consider none of them valid.

ADMINISTRATION

For injection, a 1 to 2 c.c. all glass syringe with platinum-iridium needle will be found economical, as this apparatus may be sterilized without injury by moist or dry heat. A convenient arrangement is to draw out, at the closed end, a moderately heavily walled test tube in which the syringe may be placed, so that the constriction will prevent the point of the needle from reaching the tip of the tube. If the vaccine is to be given at some distant place, this apparatus should be slipped inside a larger tube previous to sterilization. If sterilized by dry heat, a number of these syringes may be kept on hand indefinitely, ready for use.

A method of determining the proper dosage, which is of value in many cases, is to introduce the minimal dose intracutaneously and double the dose daily, until a fairly severe local reaction is obtained, then to give that amount every four or five days. No definite rule of therapeusis can be laid down; experience is necessary for best results. Probably the intravenous route will be found preferable, both as to rapidity and degree of immunity. At present, insufficient work has been done on the subject to justify the intravenous injection of vaccines as a routine procedure.

EXPERIMENTAL

I used an insufficient number of heated vaccines along with the unheated in similar cases to prove definitely the great advantage of the latter; proof of an established fact is unnecessary. But it must be proved that the vegetative power is removed from the bacteria by the action of 0.25 per cent. tricresol for twenty-four hours at 37 C. At least a thousand different vaccines of each micro-organism should be prepared by this method and every one proved sterile. Then perhaps the sterility might be relied on without testing. In the cases in which I have followed the above technic implicitly, the results have usually been better than anticipated. I am still looking for one of the non-spore bearing pathogenic bacteria which will stand 0.25 per cent. tricresol for twenty-four hours at 37 C. without losing its powers of reproduction. I have not experimented with the fungi, but am now experimenting with the tubercle bacillus along these lines. An unheated tuberculin similarly prepared may possibly give the same good immunizing results obtained by the use of living virulent tubercle bacilli by Trudeau, Neufield, Webb, Williams and Barber, Theobald Smith and others.

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[1] Park, W. H., and Williams, A. W.: Pathogenic Micro-Organisms, Ed. 5, New York, Lea and Febiger, 1914, p. 221.

[2] Crandon, L. R. G.: Surgical After-Treatment, Ed. 1, Chapter lii, by G. P. Sanborn. Philadelphia, W. B. Saunders Company, 1910, p. 763.

The above amounts of members of the phenol group do not interfere with such a delicate immunity reaction as complement fixation and probably have little or no influence on such reactions in vivo. This method of removal of vegetative powers might also be applied to sensitized vaccines.

CONCLUSION

Vaccines should not be heated above 37 C. but their vegetative powers should be destroyed by some method which does not change their immunity reactions from those of living bacteria. A method which is apparently successful with most micro-organisms is the use for this purpose of 0.25 per cent. tricresol solution for twenty-four hours at 37 C. Probably any member of the phenol group in the same bactericidal concentration would be satisfactory.

317 Penn Street.

THE PROBLEMS OF GRADUATE MEDICAL INSTRUCTION *

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The subject of graduate medical instruction is attracting much attention at the present time and is becoming a very important problem in medical education. When, ten or more years ago, the medical profession began to give serious attention to the problems of medical education in this country, acting through its most representative body—the American Medical Association—efforts for improvement were naturally directed first to the medical schools themselves. You all know how much the Council on Medical Education has accomplished in the ten years since it was organized, in establishing high standards for medical schools, in forcing many of the poorest schools to close their doors, and in making better schools of those that remain. While much still remains to be accomplished in this direction, the problem of the proper training of medical students may be regarded as practically settled.

The most important problem to-day is that of improving the knowledge of those who are already engaged in the practice of medicine. Many of them have received a very inadequate training, and from the point of view of the public welfare it is as important that these physicians should become better trained, as it is that those about to enter the profession should be well trained.

Recognizing the importance of this problem, the Council on Medical Education has undertaken a study of the present status of graduate medical teaching, with a view to making suggestions for its improvement. It recognizes the need of adequate opportunities for graduate medical study, not only because many members of the profession wish for such opportunities, but because they are essential for the public good. This aspect of the problem, the relation of graduate medical teaching to the public welfare, has received altogether too little attention. We have looked at the subject too exclusively from the point of view of academic teaching. It is commendable to encourage students to carry their studies to the limits of knowledge in any subject, and it is a worthy ambition to have the most complete equipment and facilities for such studies. But after all is not the real underlying spirit of our universities a desire to be of service to the community? Do they not aim to furnish the inspiration that will improve the condition of mankind, and raise the standards of civilization? We have been so fully occupied with the details of medical instruction, and with the difficulties of keeping pace with the growth of medical knowledge, that we have given little thought to this deeper problem of public service. Yet the possibility of public service should be one of the strongest arguments to induce medical schools to take up graduate teaching, and it should influence the line of development of this work.

Returning to the problem of the physicians who have had an inadequate training, where shall they get adequate opportunities for further study? To a certain extent it is practicable for them to attend the regular exercises given in the undergraduate schools, especially the didactic lectures and the clinical demonstrations before a class. The presence of graduates at such exercises does not interfere with the regular instruction. This is not true, however, when we come to consider individual instruction in section teaching. As a rule it is inadvisable to admit graduates to sections of undergraduate students, because the graduate should have special instruction, adapted to his individual needs, and this can be given only at the sacrifice of time which should be given to the regular students. Furthermore, few graduates can afford to give the amount of time that would be required to pursue the studies, as arranged in the curriculum of a medical school. Courses should be provided which are especially adapted to their needs.

The poorly trained men need elementary courses, not advanced courses. Should the medical schools provide such courses? Should elementary courses of this character be provided in graduate medical schools? Or should schools be organized for the special purpose of giving courses of this grade to graduates? There are advantages to each of these plans, and disadvantages as well.

Various independent schools for graduates have been organized in the past. They vary from good to very bad. Some are clearly commercial in type, and are carried on for the direct or indirect gain of the instructors. They are as objectionable as the worst type of proprietary medical schools that formerly flourished in this country, and there is equal reason why they should be abolished.

The existence of such schools shows the weakness of the plan of independent schools. There is the same need of high standards in graduate medical teaching as in the best undergraduate medical schools. The

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* Part of an address before the Harvard Medical Society of New York, Nov. 28, 1914.

good independent schools suffer by being placed in the same class with these poor schools, and they should, for their own reputation, seek affiliation with good medical schools or with universities. It is true that in the past medical schools and universities have generally shown so little interest in graduate medical teaching that it has rarely been practicable to secure such affiliation; but these institutions are beginning to recognize their obligations in this matter, and such affiliation should be more feasible in the future. In the near future I think we shall see the best of the independent schools securing such affiliation, and as more medical schools take up graduate instruction, the independent schools which are below standard will become unprofitable and will cease to exist.

And so we come back to the question whether elementary courses for graduates should be given by medical schools or by graduate departments of medical schools. This question in turn raises a question as to the scope of graduate medical teaching. Should it include only advanced courses, or may it also include elementary courses? From an academic point of view, the graduate medical school would naturally give courses more advanced than those offered in the medical school. But even in the department of arts in our universities we do not find a sharp dividing line between undergraduate and graduate courses, and it is often necessary to allow students who are registered in the graduate school to take courses that are clearly recognized as of undergraduate grade. The question whether elementary medical courses for physicians should be given by the graduate school or by the undergraduate school is a matter of convenience of administration rather than of principle.

Notwithstanding these considerations, it is useful to distinguish those advanced courses, which a graduate school ought to give, from the more elementary courses, which it may give as a matter of convenience. I would suggest therefore that the term "graduate medical course" be understood to mean a fourth-year elective or a course of still higher grade; and that courses of a lower grade, but outside the regular curriculum of the medical school, be designated "polyclinic" courses. (I use this term for lack of a better one, and would welcome a better name.) For the sake of avoiding confusion, I hope that the term "postgraduate" will gradually be dropped.

On this basis a medical school might offer graduate courses, or polyclinic courses, without organizing them as a separate department. It might develop a graduate department or school, or it might develop a polyclinic department or school. If a graduate department is organized, this might, as a matter of convenience, take charge of the administration of polyclinic courses. What should be done will depend on the conditions in each individual school. I believe, however, it is a matter of public duty for all good medical schools to consider seriously what they can properly do in the way of graduate or polyclinic teaching.

A cardinal principle in the consideration of this problem is that a medical school's first duty is to provide adequate undergraduate teaching. Until this is satisfactory, the school should bend all its energies to the improvement of its undergraduate course. It follows, as a matter of course, that Class C and Class B schools should not undertake teaching of this sort. A question arises as to how far Class A schools should enter this field. It should be remembered that only the schools in Class A+ are now considered by the Council to be acceptable without qualification. Class A schools need improvement in certain respects, although they do not need such general improvements as those in Class B. It would be wise then for Class A schools to endeavor to attain or to approach as near as possible to the standards of Class A+. They should therefore guard against any dissipation of their energies in graduate teaching. This is especially true of those schools which rank low in Class A. The better schools of this class might undertake graduate or polyclinic instruction during the summer vacation; or some departments might do this during that part of the school year when they are not engaged in undergraduate teaching.

In the latest classification of medical schools there are twenty-nine schools in Class A+ distributed in twenty states. For various reasons not all of these can wisely undertake graduate instruction on an extensive scale at the present time. It is desirable, however, that all of these schools should consider the problem seriously, and that as many as possible should become centers for giving practicing physicians a better training as well as for training undergraduates.

A considerable number of these schools are already doing work of this character, although very few have organized separate departments or schools for the purpose. It should be clearly understood that valuable work in graduate teaching can be done without such formal organization. It is the quality of the work and not the quantity that is important. Many of these schools can at least offer to qualified students opportunities for advanced study in connection with the research work which is carried on in various departments. One service which the Council on Medical Education can render is to collect data about opportunities of this sort and publish this information. It will then be available for those who seek such opportunities for study. Many students go abroad to study because they do not know about the opportunities which lie close at hand in this country, and they have no ready means of gaining this information.

The standards of graduate instruction should be just as high as those of undergraduate instruction. Therefore a school which is uniformly poor would not be acceptable for graduate teaching. But some schools, which do not rank high when attempting to give a complete medical training, may have some strong departments, which are as good as those of high-grade schools. Graduate teaching by these departments would be acceptable. Therefore some of the poorer medical schools might well consider the proposition of a change to graduate teaching, provided they limited the field of such teaching to those subjects in which the instruction would be on a par with that in the best medical schools. Such schools would generally become polyclinic schools. They should seek affiliation with medical schools of high standing, for only in this way can they wipe out the stigma of their previous low rank.

The limitation of the field of graduate teaching to those subjects which can be well taught is an important consideration also for the independent "polyclinic" or "postgraduate" schools which now exist. Some of these schools have developed certain departments so that they will compare favorably with those of very good medical schools; yet, in attempting to cover the whole field of medicine, they have other departments so poor that the school as a whole must take very low rank, when compared with regular medical schools. Again, we may find in some of these strong departments excellent teachers, who stand very high in the estimation of the profession; while in the same faculty are instructors who would be ranked as incompetent teachers by a low-grade medical school. Now that attention is being directed to standards of graduate instruction, and to the relative standing of these schools, the best men cannot afford to stay in such company. It necessarily follows that these schools must reorganize—perhaps on a more limited scale—or they must suffer a distinct loss of reputation. Such reorganization would greatly facilitate that affiliation with good medical schools which the independent polyclinic and graduate schools should seek. Naturally such changes cannot be brought about at once, but it is time that they be given serious consideration.

Let us pause a moment and summarize the ideas which have been advanced. Graduate medical instruction is one of the most important problems of medical education to-day. It is of great importance for the public welfare, because it aims to give a better training to those who are now practicing medicine. It therefore deserves careful consideration by our best medical schools. Graduate teaching should be on the same high plane as undergraduate teaching, and it should be attempted only so far as it can be placed on this plane. It should be under the control of good medical schools, or of universities; for this is the best way to maintain proper standards. The best independent schools which give instruction for graduates will probably be able to secure, in the near future, affiliation with good medical schools. The others will be forced by public opinion to reorganize and to raise their standards. Otherwise they will suffer in prestige and will become unprofitable. Instruction for graduates must be adapted to the students previous training and experience. Therefore it may range from very elementary courses to the most advanced research work. It is useful to distinguish the advanced courses from those of undergraduate grade; therefore the terms "graduate course" and "polyclinic course" are suggested. Any good medical school may offer to graduates as much or as little as it chooses in this broad range of studies, provided it is good work of its kind.

We may now consider briefly a few general topics in connection with graduate teaching.

ADMISSION REQUIREMENTS

There can be no uniform minimum admission requirements of an educational nature, as in regular medical schools. For the benefit of the public any earnest, reputable practitioner, who is licensed by the proper authorities to practice medicine, should be able to find somewhere an opportunity to improve his medical knowledge. This does not mean that he should be allowed to enter every graduate or polyclinic school, but that some schools should give courses to which poorly trained physicians may be admitted. It should be recognized that these schools are performing as useful duties as the schools which offer only advanced courses. The admission requirements in different schools will therefore vary with the kind of courses offered. The only general principle should be that each individual must have an adequate preparation for any course to which he is admitted.

CERTIFICATES

It is generally recognized that there are serious objections to the custom, which has been common in the "postgraduate" schools, of granting elaborate diplomas after short or inadequate courses. Such a diploma or certificate is likely to deceive the public, who may regard it as equivalent to a degree. People are easily led to believe that the possessor of such a certificate is a full-fledged specialist in a subject mentioned in the certificate. Unscrupulous physicians take advantage of this fact, and no one brings more discredit on the medical profession than these poorly prepared, so-called "specialists." The better "postgraduate" schools acknowledge the existence of this evil and are ready to join in a movement for its eradication.

At the Harvard Medical School, before the graduate school was organized, this custom prevailed of granting a certificate for attendance at single short courses. The certificate was unpretentious in form and it often provoked severe criticism from those who wanted it for advertising purposes; consequently the evil results were avoided in part. When the administrative board of the graduate school considered this problem, it recommended a radical change of policy, and its recommendations were adopted by the faculty of medicine. Since Oct. 1, 1912, certificates have been granted only after four months of continuous work, which has occupied the whole day. This is equivalent to a half-year in the undergraduate school. In addition to this, candidates for certificates must announce the fact that they are candidates at the beginning of their course, they must be accepted as candidates by the administrative board, and they must choose a systematic course of study which receives the board's approval. If their work in the individual courses is approved by the instructors, they are then eligible for an examination. The administrative board will grant a certificate only after this examination has been passed successfully. A student's previous medical or scientific training and experience are considered in deciding whether he may be accepted as a candidate for a certificate.

Under these regulations the school is warranted in setting its stamp of approval on the successful candidates. The certificate was properly given the form of a diploma, and it is signed by the dean and the members of the examining board. In the past two years, out of more than one thousand students only six have received a certificate. The average length of the course of study of these men was between six and seven months. The faculty of medicine has recently adopted the further recommendation of the graduate school, that after June 1, 1915, the time requirement for the certificate be increased to eight months. This will make the work required equivalent to one year in the undergraduate medical school.

What shall be done about students who attend for a shorter period and wish a testimonial or a statement about their work? We have met this problem by granting an "official statement." This is a typewritten statement on the regular letter-head of the school. It is given official standing by the signature of the dean or the secretary. It is a plain statement, attesting the fact of attendance, the duration and character of the course, and any other essential facts, including the marks in any authorized examinations the student may have taken.

When these regulations about certificates and official statements were adopted, we were naturally interested to see whether the effect would be to lower the number of students. If the regulations have kept students away, other attractions have more than offset the loss, for our numbers have shown a gratifying increase. We believe that it is practicable for the better "post-graduate" schools to adopt similar requirements, on the basis of four full months of study as a minimum requirement for a certificate.

STANDARDS FOR GRADUATE MEDICAL SCHOOLS

On what basis may approval of graduate medical schools be granted? Not on admission requirements, for reasons already stated. Not on the requirement of a definite period of attendance, for such a requirement would materially limit the usefulness of the school. However much we may wish graduates to take long courses, the fact remains that after they have established themselves in practice they can seldom leave for more than a short period of study. We should encourage them to improve their medical knowledge, even if they can get only a little at a time. Physicians in the neighborhood of graduate medical schools should even be encouraged to take single exercises, as occasion offers, from time to time. Again, we cannot base our approval of an institution on the number of subjects in which it gives instruction, for some of the best instruction will be given in institutions with a special, limited field.

Approval of these schools may be based fairly on three factors: first, and most important from this point of view, the adoption of satisfactory regulations about granting certificates; second, the limitation of the field of work to subjects in which the equipment and facilities for teaching are equal to those of approved medical schools; third, a guarantee of the quality of instruction by the existence of a corps of instructors who would be acceptable in an approved medical school.

STANDARDS IN SPECIALTIES

The problem of establishing standards of preparation in the various specialties is attracting much attention at the present time. It is a complex problem and one that is difficult to solve, yet it is becoming more and more important for us to reach a sensible solution. It is not my intention to discuss this problem on this occasion, but merely to point out that the graduate medical schools are concerned in its solution. Any standards which may be adopted must insist on a certain amount of systematic advanced instruction. Such instruction can best be organized in graduate medical schools. Therefore the establishment of standards for these schools is an essential part of the solution of the problem of standards in the specialties.

HIGHER DEGREES IN MEDICINE

By this we mean degrees that are higher than that of Doctor of Medicine, and for the acquirement of which the degree of M.D. will be a prerequisite. Here is another important problem that is being forced on us. It is a natural development from the problem of standards in the specialties. If, after graduation, a student has pursued advanced studies for a sufficiently long time, so that he is especially proficient in his chosen subject—in arts, in many of the sciences, and in some professional lines—he is granted a special degree to attest his proficiency. Why should he not receive similar recognition in medicine? From the point of view of the health and benefit of the community, the recognition of special skill or training in medicine is fully as important as in the other subjects in which such recognition is granted.

The universities are recognized as the authorities most able to establish proper standards for advanced study in medicine. Therefore, it is desirable for them to grant such higher degrees. Some universities have already taken a definite stand in this matter. As stated above, the subject is under consideration at Harvard. No one is warranted at present in making a definite statement as to what the decision will be, but it seems likely that Harvard will adopt the plan of a single advanced degree in medicine, and that in the degree mention will be made of the special field of medicine in which distinction has been won. This usage would be similar to that in the case of the degree of Doctor of Philosophy.

The subject of higher degrees in medicine has been selected by the Council on Medical Education as a topic for discussion at its next conference, in February. It is hoped that this discussion may help toward a general agreement as to what is best to be done in this matter.

THE TREATMENT OF HEMORRHAGE BY INJECTION OF BLOOD*

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CHICAGO

Those who have investigated its therapeutic possibilities firmly believe that blood and derivatives of it are of value in the treatment of persistent hemorrhage. Yet there is a surprising failure on the part of the profession to utilize thoroughly this means of treatment, and, in view of this fact, it seems desirable that certain features of interest be made the subject of special consideration.

I. SIMPLE AND SATISFACTORY METHODS FOR BLOOD INJECTION

Those who believe that blood constitutes a valuable remedy in the control of hemorrhage either advocate serum from the lower animals or tend to employ a needlessly elaborate technic when human subjects furnish the supply.

The use of serum from the lower animals is subject to some objection — it may not be available when most desired, anaphylactic reaction is always a possibility, there is some danger of tetanus, and when preserved there is a tendency to contamination as well as possible loss of efficiency because of age.

If human blood be used it is my belief that whole blood possesses the beneficial qualities common to serum or other derivatives and that it does not contain elements which are more likely to be harmful to the patient. This belief is upheld by clinical results.

The methods commonly employed in the preparation of human blood after withdrawal from the donor consist in allowing it to stand until the serum separates, or in centrifuging in case of urgency. The serum is then injected subcutaneously or intramuscularly. A more simple and regularly successful technic, and one which reduces danger of infection to a minimum, consists in injecting whole blood into the patient immediately on withdrawal from the donor. A 20-c.c. or larger ground-glass syringe is sterilized, preferably by the dry method, and the inner surface lubricated with sterile petrolatum. Blood is withdrawn in the usual manner from a cubital vein of the donor; the needle is then inserted beneath the subcutaneous tissues of the back of the patient and the blood injected. There is no need for haste. This procedure not only has the advantages of simplicity and promptness, but does away with likelihood of contamination during transfer of blood.

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* From the Memorial Institute for Infectious Diseases.

In unusual instances, when much blood must be obtained at one time, it may be aspirated directly into a sterile bottle provided with a coil of wire, immediately defibrinated and kept in the ice-box until desired. This blood should be used within a moderate number of days and contamination must be guarded against.

II. TREATMENT OF HEMORRHAGE FROM THE UTERUS

Leaders in special departments of surgical work are prone to overlook the possibilities of blood therapy. For example, among the many publications recently devoted to the treatment of uterine hemorrhage, there is a general failure to mention the therapeutic value of blood or its derivatives.

Especially in those cases in which discovery or removal of the cause proves impossible, blood is a valuable aid. In many ways it takes precedence over radium and therapy with filtered Roentgen rays, for these are obtainable only in a limited number of large hospitals, and necessitate a considerable outlay of time and money. Moreover, they tend to produce atrophy of the ovaries and are not entirely devoid of danger.

That injected blood is at least worthy of trial is indicated by two cases which represent the results obtainable in patients with "idiopathic" hemorrhage.

Case 1.—A multipara, aged 30, had hemorrhages from the uterus for nine months. Examination was negative. Curettement checked the flow for two months, after which it recurred as previously. At the desire of the patient, supravaginal hysterectomy was performed in preference to blood injection. After three months began continuous bleeding from the cervical stump, associated for the first time with petechial hemorrhages of the lower extremities. Subcutaneous injection of 25 c.c. of whole blood, obtained from the husband, caused prompt cessation of bleeding. This treatment was twice repeated. Hemorrhages did not recur.

Case 2.—Patient, near the menopause, had flowed profusely for many months. Minor surgical measures of various sorts were unavailing. Five subcutaneous injections of blood resulted in cessation of flow. One year later bleeding recurred. Five injections of blood from the husband, given every second day in amounts varying from 10 to 20 c.c., resulted in permanent recovery.

III. BLOOD INJECTION VERSUS TRANSFUSION

It is believed that the transfusion of blood is often advised when less heroic measures would prove quite as satisfactory. Thus in *hemorrhage of the new-born,* when the patient is seen before life is in danger from exsanguination, blood injection is indicated. For the purpose of checking hemorrhage this is essentially as efficacious as transfusion; at least it has proved satisfactory in all except one of several cases so treated by me.

If anemia is profound more blood must be provided. This may be done by any one possessed of ordinary surgical ability. An extremely large (100-c.c.) ground-glass syringe lubricated with liquid petrolatum is employed. This is provided with either a large needle or a small cannula tip. After a 1-inch exposure of the child's external jugular or femoral vein, the syringe is filled and the blood injected into the vein of the patient in the direction of the heart.

In *other types of anemias, notably secondary anemia* consequent to prolonged bleeding, blood injection again has a wide field of usefulness. It is the procedure of choice when bleeding has not been permitted to reach the point of exsanguination.

Likewise in chronic wasting diseases and infections with grave outlook, in tuberculosis with unfavorable prognosis and in other conditions of like nature, the trial of repeated injections of blood merits consideration. Although unable to present an assortment of cases of this type sufficiently large to be convincing from a statistical point of view, I anticipate that the future will show much benefit from this form of therapy. Except in extreme cases in which red cells and hemoglobin have fallen to the point at which they are incapable of performing their necessary share of work, transfusion promises no more permanent aid than the repeated injection of small amounts of whole blood.

SUMMARY

1. Repeated subcutaneous injection of whole blood immediately on withdrawal from a healthy donor is a simple procedure of value in the treatment of hemorrhage.

2. In many cases of uterine hemorrhage this therapy obviates the need of operative interference or expensive and time-consuming Roentgen-ray treatment.

3. For persistent hemorrhage of moderate severity—for example, hemorrhage of the new-born—blood injection rivals transfusion in results achieved, and is the method of choice because it requires little technical skill. In infants with severe anemia, intravenous injection of blood by means of a 100-c.c. lubricated ground-glass syringe is a worthy substitute for a transfusion operation.

4. Hemotherapy for chronic anemias, wasting diseases and infections with grave outlook deserves serious consideration. It is not unlikely that the stimulating effect of repeated injections of blood offers more hope in this field than does the more difficult procedure of one or even two transfusions of large quantities of blood.

104 South Michigan Avenue.

Value of Whole-Time County Health Officer.—North Carolina was one of the first states to employ whole-time county health officers. A recent bulletin of the State Board of Health gives an indication of the value of the service rendered by such officers in improving health conditions and reducing the death-rate. In Robeson county, in which Dr. Boney W. Page, Lumberton, is the whole-time county health officer, the death-rate was reduced from 18 per thousand in 1912 to 12 per thousand in 1914. The reduction in the number of deaths from various diseases for 1914 as compared with 1912 was as follows: tuberculosis, 147 to 70; diarrheal diseases of infants, 90 to 65; typhoid fever, 33 to 9; small-pox, 16 to 1; diphtheria, 14 to 3; whooping-cough, 35 to 9; pneumonia, 130 to 85; total from all diseases, 907 to 730. This showing is made in the face of the fact that 55 per cent. of the population of the county consists of Indians and negroes, and that the death-rate of the negroes is over 40 per cent. higher than that of the white population, and also that the county lies in the malarial area. The death-rate from malaria has been reduced 75 per cent. in three years, and that of other preventable diseases 70 per cent. The saving in lives is said to represent a money value of $290,000.

DOUBLE DETACHMENT OF THE RETINA AS A SEQUENCE TO NEPHRITIS

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Albuminuric retinitis as a complication of a nephritic lesion is not an unusual condition. While encountered in from 10 to 25 per cent. of all cases of contracted kidney, it is not seen so frequently in the parenchymatous form of nephritis, nor has it in the latter condition such an evil prognostic significance.

Detachment of the retina, as a result of serous effusion following a lesion of the kidney, is an exceedingly rare affection. The literature on the subject is very scanty and in conversation with local oculists of considerable experience I have been unable to elicit a history of one such case.

The infrequency of this condition is my reason for reporting the following case:

W. K., a telegraph operator, who had five years ago been treated for "kidney trouble" and was thought to have been cured, about the second week in February, 1914, noticed a blurring of vision. This rapidly increased and he found himself unable to read the manuscript of his work. This attack was accompanied by headache and vomiting. The physician whom he consulted diagnosed his condition as glomerular nephritis and an oculist to whom he was referred found albuminuric retinitis present in both eyes.

March 27, I visited him in consultation with his family physician. At that time the patient was confined to bed, being hardly able to sit up, and his vision was reduced to the perception of light and darkness. The examination of the eyes disclosed the following condition:

Right Eye: Vision reduced to perception of light; pupil dilated and did not respond to light. Rotation of the eye was normal. Beyond the dilated pupil there was no external evidence of an eye lesion.

Fundus: There was a grayish reflex instead of the usual pink retinal glow. The optic nerve was decidedly blurred, veins swollen and tortuous. At the region of the macula there was the characteristic appearance of albuminuric retinitis. Running in an inverted horseshoe fashion and beginning about two nerve-heads' width below the papilla was an elevated tumor giving a grayish-green reflex and seen best with a plus 12.00 lens behind the ophthalmoscope. (Optic Nerve seen with plus 1.00.) On top of this tumor were markedly tortuous small blood-vessels. Tension was normal, or if anything, very slightly elevated. The left eye was practically the same as the right. Three days later, I made a second examination. The area of detached retina now extended above as well as below the optic nerve, so that the only attachment of the retina was around the circumference of the papilla. The patient maintained that his vision was somewhat improved, although a test made did not tend to confirm his belief.

Transillumination showed a clear glow, eliminating the remote possibility of a solid tumor, as the cause of the detachment.

Urinalysis: Color, usually light amber, occasionally dark. The specific gravity was 1.002. The albumin ring was well marked. There was no sugar. The sediment was granular, and there were hyaline and epithelial casts, as well as kidney epithelium. The phenolsulphonephthalein test showed an excretion of 15 per cent. in two hours.

Systolic blood-pressure was 210.

There was no edema of ankles, swelling under the eyes, ascites or evidence of serous effusion elsewhere in the body. It may be of interest to note that one married sister had an attack of albuminuria with her last pregnancy. The patient died, April 23, 1914.

While the majority of the well-known text-books say nothing on nephritic conditions as a cause of detached retina, Roemer[1] mentions its possibility and Weeks[2] cites a case very similar to the one just reported.

Two articles by Leber[3] and Verderame[4] discuss this condition.

I am indebted to Drs. David Jewett, van der Beek and Frank Barber for their kind cooperation.

INTRA-URETHRAL BREAKAGE OF VACUUM ELECTRODE

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The time of the physician is so encroached on nowadays by salesmen who are persistent as to the quality of their wares, that sometimes one is apt to be misled by their statements, and by so doing may cause some disastrous results. As many of these results are never known to any except the man who is unfortunate enough to attain them, it seems to me only just that if one has an untoward accident with a so-called harmless instrument he is only acting fairly in making mention of it, that others may avoid like consequences.

About a year ago a very persistent salesman succeeded in selling me a set of high-frequency vacuum electrodes. Among them was one for intra-urethral treatment. On examining it I remarked to the salesman that I believed it to be a dangerous instrument, since a breakage of the tube would leave a foreign body in a place very difficult to reach; but he assured me that no such thing had ever occurred. Nevertheless, on receipt of the instruments I was slow to make use of this particular one, and for several months it remained only an ornament in my instrument case. At last, however, a case presented itself in which I believed this particular modality might be utilized with benefit, and I proceeded to use the apparatus that I had feared so much at first. I administered a number of treatments with no unpleasant results, but one day while giving a treatment the tube snapped, my patient at once complained of excruciating pain and I realized that my forebodings had come true.

On attempting to remove the broken instrument I encountered much resistance, and it finally dawned on my mind that the vacuum had probably acted to draw the membranes of the urethra into the broken ends of the tube. I felt that I was in a very serious predicament, though not quite so serious as that of my patient. A liberal application of a local anesthetic somewhat relieved the pain that was occasioned by the indrawing of the mucous membranes by the action of the vacuum, and by a great deal of manipulation with a hollow instrument alongside the electrode I managed to admit some air into the outer portion of the electrode, after which it was easily removed.

It had broken about midway of the shaft of the instrument, and the broken end of the portion that remained was about 5 inches down the urethra. My experience with the action of the vacuum with the first portion of the tube led me to exercise a great deal of caution in attempting to remove the latter part that extended well down toward the bladder, and by the

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1. Roemer: Text-Book of Ophthalmology, Foster's Translation, 1913, p. 755.
2. Weeks: Diseases of the Eye, 1910, p. 482.
3. Leber: Arch. Ophth., 1909, lxx, 200.
4. Verderame: Klin. Monatsbl. f. Augenh., 1911, xlix, 452.

introduction of an endoscope and manipulation of the mucous membranes that had been drawn into the electrode I finally succeeded in releasing them and admitting air into this portion of the electrode also. After this a large endoscope was introduced in contact with the broken portion, which fortunately fitted inside the endoscope, and a finger introduced into the rectum propelled the glass fragment forward until brought into sight, when it was removed manually. A careful examination of the two fragments disclosed the fact that the break in the instrument had been a clean one and had left no small fragments in the urethra, for which I was very thankful.

The patient apparently seemed to have no particular after-pain or complications of any sort. I have watched the case carefully up to the present time and there is no evidence of stricture or any other organic trouble resulting from this unpleasant incident. But the patient was thereafter very suspicious of any intra-urethral applications, and, in fact, would have been very foolish had he been disposed to have any other attitude toward that line of treatment.

Needless to say, I have not replaced that broken instrument; but I shall keep it to remind me of the folly of taking another man's word against one's own honest convictions. The incident has given me a wholesome fear of using any but absolutely safe instruments in the body cavities.

AN INSTANCE OF PULMONARY SYPHILIS CLOSELY SIMULATING TUBERCULOSIS

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SAN FRANCISCO

Pulmonary syphilis is so infrequent as to be interesting for its rarity alone. There was added interest in this case because the patient had been treated for pulmonary tuberculosis for months before presenting himself to me on account of the cutaneous lesions, and the mimicry of pulmonary tuberculosis was so good as to condone the error. In fact, the patient afforded an excellent example of how valuable cutaneous and lingual lesions may be in furnishing hints as to the true nature of deeper lying affections.

History.—F. W., man, aged 37, sought advice, June 25, 1914. I had seen him nearly nine years before with an orchitis. He acquired his present infection sixteen years ago, in 1898. For seven months preceding June 25 he had had a persistent cough, especially marked in the morning and accompanied by profuse expectoration. There had also been several slight hemorrhages, and chilly sensations generally in the afternoon, followed by what the patient thought was fever. He had drenching night sweats, and always felt tired and weak on arising. There was marked loss of weight, though his appetite had continued fairly good. There were no gastro-intestinal symptoms aside from a tendency to constipation. Two careful examinations of the sputum for tubercle bacilli were negative. During the last year small gummas appeared on the body and legs, many of which ulcerated and healed, leaving characteristic syphilitic scars. There was one ulcer present on the right knee when he came in. The dorsum of the tongue was deeply fissured, and there were patches of sodden epithelium on the sides, and one small ulcer, making the whole lingual picture typically syphilitic. The voice was clear and there had not been huskiness at any time. Stripped, the patient looked emaciated. The skin was faded, muddy colored, markedly wrinkled and lacking in elasticity. There were sunken supraclavicular and infraclavicular spaces on both sides, and the scapulae were prominent. No distinct difference in the percussion note over the lungs could be detected. There was apparently an abnormally high pitched note over both upper lobes, and there was a distinct increase in the vocal fremitus and vocal resonance in these areas. It appeared as though there was an active tuberculous process in both the apices. Crepitant râles were heard anteriorly in the supraclavicular and infraclavicular regions, and posteriorly in the suprascapular and interscapular areas.

Treatment and Results.—The patient was given 0.45 gm. of neosalvarsan intravenously, and a week later he reported that after the third night his night sweats had disappeared, there was much less coughing, and he was feeling much better. The cough disappeared completely before the end of two weeks following the injection. Intramuscular injections of gray oil (mercurial oil) were begun, but, as it was necessary for him to leave the city, he was given mercury and potassium iodid by mouth, to be continued until he could return for another injection of neosalvarsan. When he did return, ten weeks later, all lesions on the tongue and external surface were healed; he was looking quite well; and all the symptoms and signs of tuberculosis were gone. He is still under treatment for syphilis.

It is difficult to specify definitely the pulmonary condition. The fact that the patient had small cutaneous gummas and a gummatous ulcer of the tongue, associated with the history of repeated hemorrhages, would lead one to believe that there must have been a miliary gummatous process with breaking down somewhere in the bronchi, or deeper, within one or both lungs. The presence of bronchovesicular breathing and râles in both apices would indicate that an infiltration in the mucous membranes, deeper within the lungs, had also occurred. The physical examination did not show evidence of a large gummatous tumor anywhere in the chest, nor were any cavities demonstrable. All the evidence would lead to the conclusion that the process was diffused in the upper parts of the lungs. It was impossible to rule out tuberculosis before treatment was begun, but negative examinations of a fairly profuse mucopurulent sputum combined with a definitely positive diagnosis of syphilis justified treating the positive disease with salvarsan and mercury, and relegating the treatment of a possible accompanying tuberculosis to a later time when the syphilis would be controlled.

I reasoned that if not all the symptoms were due to syphilis, and if the patient were fighting two diseases, one of which could be quickly subdued, he would have a better chance to fight the single disease, tuberculosis, than to fight both syphilis and tuberculosis together.

That all the signs and symptoms simulating tuberculosis should disappear soon after instituting syphilitic treatment is characteristic of syphilis as opposed to tuberculosis, which is slow in improving, even under the most favorable conditions.

A small dose, 0.45 gm., of neosalvarsan was given to avoid a Herxheimer reaction, which in this particular case might have resulted in a marked aggravation of the bronchial and alveolar symptoms. Apparently, the result was as good as could have been obtained from a maximum dose. In fact, it was a demonstration of the correctness of the idea that is now so widely accepted, that a dose of 0.45 gm. of neosalvarsan can achieve everything that a dose of 0.6 or 0.9 gm. can, and with much less danger of disagreeable or dangerous by-effects.

A history of infection is only a small factor in the differential diagnosis between pulmonary syphilis and pulmonary tuberculosis, and may not be of more importance than to put one on the right track for an investigation. Many sufferers with tuberculosis have had syphilis, and indeed the latter is often considered a factor predisposing to tuberculosis. A tuberculous family history is of great importance in the diagnosis of tuberculosis, but is not evidence against syphilis, and it might mislead the physician who has to deal with a case of pulmonary syphilis.

All writers on the subject of lung syphilis agree that the syndromes of pulmonary tuberculosis and pulmonary syphilis are so similar that a positive diagnosis of pulmonary syphilis alone is very difficult to make before the institution of treatment in the cases with recovery, or before necropsy in the fatal cases. The cough, which is one of the first symptoms, is not distinctive.

The sputum in syphilis, like the sputum of chronic bronchitis, may be of a mucopurulent character, or it may even contain elastic tissue, and may be tinged with blood. The inability to find tubercle bacilli after many searchings unfortunately does not exclude tuberculosis. Their presence clinches the diagnosis of tuberculosis, but does not rule out the possibility of syphilis existing with tuberculosis. Hemoptysis is less common in syphilis, and when it does occur, as in the case reported in this article, it is usually not severe.

Dyspnea may be as marked in syphilis as in pulmonary tuberculosis, and therefore is not of any assistance in a differential diagnosis. The temperature may run high, even as high as 106 F., for weeks, as in Roussel's case, or may be hectic.[1] It is more apt to be irregular, but may be entirely absent. Night sweats are not common in lung syphilis, but in the case which I have reported they were present and of a drenching character. Emaciation may be marked in both conditions, for syphilis of the lung is a progressive disease, as is tuberculosis, and in most instances is not discovered until late.

Investigators disagree as to whether or not the physical signs in the lungs can be interpreted with any definiteness in a supposed case of lung syphilis. The signs in the present case were those of tuberculosis, and I was at first under the impression that the patient had a double infection.

Quoting from Roussel,[1] who quotes Fowler, attention is drawn to these possible points of difference between lung syphilis and lung tuberculosis:

> First, tubercle usually affects the apex of the lung, subsequently the apex of the lower lobe. The lesion of syphilis is often about the root and central portion of the lung, and follows no definite line of march. Second, both tubercle and gumma may undergo either necrosis and caseation or fibrous transformation, but with caseous tubercle the tendency toward softening and cavity is the rule, whereas a caseous gumma rarely breaks down. Third, cavities are common in tuberculosis and rare in syphilis, excepting secondary to stenosis of the main bronchi. Fourth, stenosis of the trachea and main bronchi is common in the advanced stages of syphilis, rare in tuberculosis. Fifth, cavities in pulmonary syphilis are generally but not invariably bronchiectatic, and in tuberculosis they are due to destruction of the lung tissue. Sixth, the tendency to the formation of pulmonary aneurysms, which is so marked a feature in tuberculosis, is rarely observed in pulmonary syphilis. Seventh, pulmonary lesions in tuberculosis are very common, whereas in syphilis they are extremely rare.

There are certain positive helps which may aid greatly in the diagnosis. Positive evidence of syphilis, as demonstrated by a positive Wassermann test, or, as in the present case, by active syphilis elsewhere, is sufficient to warrant treating the patient immediately for syphilis. The excellent effect of salvarsan on the mucous membranes makes it our most valuable primary remedy. And this followed by mercury and iodids may produce a quick symptomatic cure.

In any case of chronic pulmonary disease with absence of tubercle bacilli and lacking the various reactions from tuberculin, but presenting symptoms or a history of syphilis, antiluetic treatment is justifiable even if only as a diagnostic measure.

As to the frequency or rareness of pulmonary syphilis of the acquired form as opposed to the congenital form, which is not uncommon, Stengel[2] suggests that the difference of opinion depends on the point of view of the observer, whether he is a clinician or a pathologist, the former believing the condition to be fairly common, the latter that it is very unusual.

Roussel mentions the following groups of cases: that of Carlier in 1882, consisting of 75, with 50 necropsies; that of Hiller in 1884, consisting of 87, 84 of these with necropsies (20 of which had been previously reported by Carlier); that of Connor, consisting of 129 cases of syphilitic stenosis of the bronchi, with reports of necropsies in 56, in 10 of which there were lesions believed to be characteristic of syphilis of the lungs; and lastly, that of Fowler, consisting of 12 specimens found in the museums of London hospitals and the Royal College of Surgeons, which illustrate syphilitic lesions of the lungs of the acquired type.

The number of necropsies in these groups is striking and indicates how malignant pulmonary syphilis is. The improved methods in diagnosis of syphilis, and the present effective mode of treatment by the combined arsenical and mercurial medication should make future statistics more complete with a smaller percentage of fatalities.

323 Geary Street.

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[1] Roussel, A. E.: Pulmonary Syphilis, New York Med. Jour., Sept. 27, 1913, p. 500.

[2] Stengel: Univ. Penn. Med. Bull., 1903-1904, quoted by Clayton, T. A.: Syphilis of the Lung, Am. Jour. Med. Sc., April, 1905.

Accidents in the Coke Industry.—An investigation by the Bureau of Mines for the year 1913 covering 227 plants in the coke industry of the United States, employing 24,345 men, shows that 46 men were killed, 342 seriously injured and 2,172 slightly injured. This report covers practically one-half the operators and 80 per cent. of the ovens, and the figures are representative of the whole industry. Of the 46 deaths, 20, or 43 per cent., were due to accidents in connection with haulage or transportation systems; 6 were due to coke-drawing machines, representing 13 per cent., and 11 per cent. were due to electricity. As much of the transportation in the coke industry is electrical, a portion of this 11 per cent. of fatalities from electricity would also come under the head of transportation. Twenty-six per cent. of the serious accidents were also due to haulage systems, and 8 per cent. of slight injuries. As the report states, these accidents should be largely preventable and greater precautions should be taken to safeguard employees. In addition to the six fatalities due to the process of making coke, 23 per cent. of serious injuries were due to falls, 12 per cent. of slight injuries to falls, 14 per cent. to hand tools and 16 per cent. to burns. The accidents in this industry compare favorably with those in quarries and metal mine surface injuries.

Special Article

PRACTICAL PHARMACOLOGY *

(*Continued from page 246*)

III

A. STIMULANTS: 2. MEDULLARY—ATROPIN GROUP

Atropin is much the most important member of this group, which includes scopolamin and homatropin and the crude drugs, belladonna, hyoscyamus and stramonium, together with their preparations. The alkaloids of this group are commonly called the mydriatic alkaloids, because dilatation of the pupil is the most characteristic action which they possess in common. While they exhibit individual differences in their actions, they form a fairly well-defined group.

The action of atropin will be discussed in some detail, and the special uses of others will be mentioned, but in the main it is to be understood that the several drugs are used for the same purposes, with the exception of scopolamin. This drug occupies a special field of usefulness because of the fact that while it resembles the other members in a general way, its stimulant action on the central nervous system is so much less pronounced than theirs, while the depression it produces is so much more prominent, that it is used to produce depression, while atropin is used to cause stimulation. This illustrates the difficulty of classifying drugs satisfactorily.

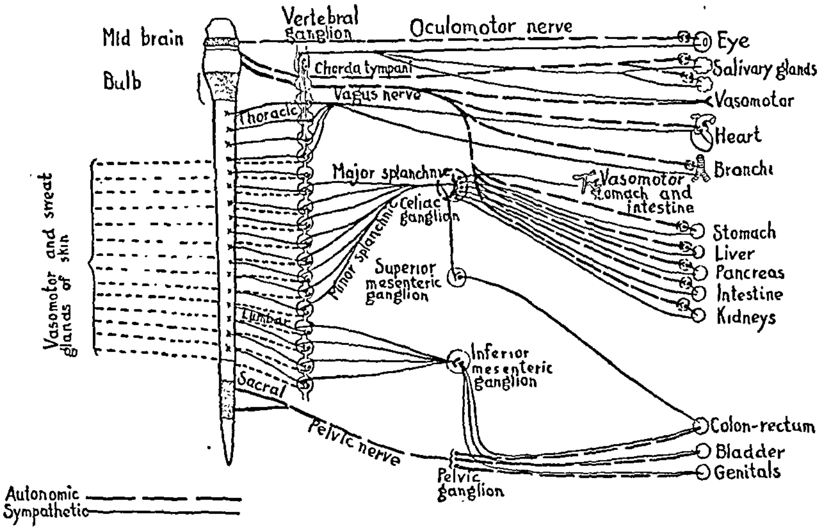

Diagram of the anatomic relations of the autonomic and sympathetic systems (from Meyer and Gottlieb, Experimentelle Pharmakologie, 1911, p. 128).

In practically all cases the actions of alkaloids are so nearly like those of their salts that they are discussed together. It is understood that the salts contain a small amount of acid, which is negligible so far as the pharmacologic actions of the alkaloids are concerned, but for which allowance must sometimes be made in calculating the dose. The principal reason for using salts of the alkaloids is that the salts are more soluble than the alkaloids themselves.

The chemical investigation of the drugs which yield the mydriatic alkaloids presents many difficulties, and some confusion has resulted from the application of the same name to different substances, and of different names to the same substance in slightly different degrees of purity. It is recognized at present that the substance first described as hyoscin was nothing but an impure form of the alkaloid which in pure form was first described correctly under the name of "scopolamin;" hence the two terms are purely synonymous, and only the name "scopolamin" should be used.

Therapeutic doses of atropin exert a greater action on the medulla than on the brain, but with toxic doses the effects on the cerebrum become more pronounced.

Atropin stimulates the respiratory center in the medulla, causing a marked increase in the amount of air breathed in a given period of time. Poisonous doses cause depression of the respiratory and other centers. This action on the respiratory center is of great importance, atropin being one of the most active of the respiratory stimulants which we have.

The vasomotor centers are stimulated by moderate doses of atropin, which cause a scarlet appearance of the face and upper part of the body, due to a dilatation of the vessels of those regions simultaneously with a constriction of the vessels of the splanchnic region. There may be merely a redness of the skin, or there may be a rash, followed by desquamation, but usually the rash disappears within a short time.

The vasoconstriction tends to raise the blood-pressure, but the effects of atropin on the circulation are complex and the height of the blood-pressure with small doses depends on the heart-rate rather than on any vasoconstriction.

The vagus center is stimulated somewhat with the respiratory and vasomotor centers, but this is soon overshadowed by the depression or paralysis of the vagus endings in the heart, which is one of the characteristic actions of all of the mydriatic alkaloids.

The vomiting center in the medulla is not stimulated with moderate amounts, and the action is not usually pronounced even with toxic doses, probably because of the simultaneous narcotic effect. Very small doses, 0.2 mg. ($\frac{1}{300}$ grain) tend to allay nausea.

The actions on the brain cannot be described in detail, and it need only be said that larger doses cause stimulation of certain areas, resulting in increased coordinated movements, talkativeness, excitement and delirium, followed by depression and coma. Atropin in moderate doses does not affect the psychic areas so much as caffein does. It is not used therapeutically for its actions on the brain.

Atropin depresses or paralyzes the endings of the parasympathetic[1] nerve throughout the body, including the oculomotor, chorda tympani, vagus and erigens, and also the sympathetic endings in the sweat-glands in the skin. It will be observed that the sympathetic endings in the sweat-glands behave toward several drugs like the parasympathetic endings (Fig. 1).

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* This is the third of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

[1] Reference to Figure 1, *taken from* Myer and Gottlieb's Pharmacology, Ed. 2, will show the relationship between the sympathetic and parasympathetic nerves. Epinephrin stimulates the myoneural junctions of all of the sympathetic nerves (except those to the vessels and sweat-glands of the skin), while it leaves those of the parasympathetic unaffected. Atropin, on the other hand, paralyzes the endings of those nerves which epinephrin does not affect while it has no influence on those which epinephrin stimulates. *Many other* drugs show similar selective actions with reference to these nerves.

A discussion of the peripheral actions of atropin is largely a discussion of the *functions* of the parasympathetic nerves, for atropin simply abolishes those functions, but it acts on these endings in different parts of the body with varying degrees of intensity. Hence a given dose does not have the same relative effect on all organs which the nerves supply.

Atropin can be brought into contact with the oculomotor endings by dropping a solution into the eye, without inducing its systemic actions, but its actions on other parasympathetic endings cannot be elicited so conveniently.

Depression of the oculomotor endings causes dilatation of the pupil through the unopposed actions of the radiating fibers, and it also causes paralysis of the muscle of accommodation. These actions are prolonged after repeated applications, or after the use of strong solutions, and it may be a week or more before the eye becomes quite normal.

The action of homatropin on the pupil is qualitatively like that of atropin, but the effect is not so lasting. Homatropin is often preferred when an examination of the eye is to be made, but it is not so dependable as atropin, which many oculists continue to use even for the examination of the eye. Dilatation becomes maximal in a period usually varying from half an hour to an hour. Scopolamin acts as a mydriatic in the same way as atropin.

The actions of atropin on the pupil and on accommodation may be counteracted with physostigmin, but this renders the muscles of accommodation hyperexcitable, so that efforts at accommodation result in spasm of the muscles, and reading is attended with discomfort.

Paralysis of the chorda tympani endings interferes with the secretion of the salivary glands, rendering the mouth and throat dry, the voice hoarse, and swallowing difficult. The mucous glands in the nose and respiratory passages and the gastric, pancreatic and biliary secretions, and possibly the secretion of milk, are also inhibited by atropin. The action on the sympathetic endings in the sweat-glands causes the skin to become dry, these being the only sympathetic endings which behave toward a number of drugs like the parasympathetic.

The paralysis of the vagus endings in the heart causes the heart to beat more rapidly; in the stomach and intestine it overcomes the motor influence of the vagus.

The lower part of the colon, the rectum and the uterus are innervated by the erigens, the endings of which atropin paralyzes. The intestinal effects will be discussed in connection with the evacuants.

Depression of the vagus endings in the bronchi result in muscular relaxation, when the muscles are spasmodically contracted in asthma.

Atropin depresses the sensory endings in the skin with which it may be brought into contact in the form of an oleate, or of an ointment of belladonna extract.

Atropin and the other mydriatic alkaloids are absorbed promptly from the gastro-intestinal tract and from the subcutaneous tissues. Some absorption occurs even from the unbroken skin when suitable application is made; at least the drug may reach the sensory endings in sufficient amount to cause analgesia.

The mydriatic alkaloids are excreted in the urine for the greater part, and scopolamin is said to be excreted in human milk to a slight extent.

The fatal dose of atropin is supposed to be about 125 mg. (2 grains), but much smaller amounts give rise to unpleasant and even alarming symptoms of poisoning. These symptoms may be enumerated somewhat in the order of their occurrence with increasing doses as follows: Even the larger therapeutic doses induce redness, or rash of the skin, which results in desquamation; the skin, as well as the nose, mouth, throat and bronchi become dry; the voice becomes hoarse, swallowing difficult; the heart becomes rapid with rise of blood-pressure, and some motor unrest. Talkativeness, and dilatation of the pupils from systemic action occur only with very large doses; these symptoms may be succeeded by coma and respiratory failure ending in death, or there may be convulsions; nausea and vomiting are reported as common symptoms, and these must be of central origin. Small doses of atropin, however, prevent nausea when given with morphin, and even the largest doses of atropin do not cause vomiting after intravenous injections in dogs.

Poisoning by atropin may occur through the accidental taking of a solution intended for external use, or the use of strong solutions in the eye. Belladonna berries are attractive in appearance and are not infrequently eaten by children. Fortunately, they are indigestible and may result in vomiting before a fatal dose has been absorbed.

The symptoms of poisoning by atropin or one of the members of the group are usually so typical as to direct attention to the cause, but where the earlier symptoms are obscure, suspected poisoning may be confirmed by testing the urine for atropin. For this purpose a few drops of the urine are dropped into the eye of a cat; if atropin or any other of the mydriatic alkaloids is present the pupil will dilate widely within about half an hour. The test should be made within thirty-six hours after the poison has been swallowed.

In case of poisoning by the berries, or when one suspects that a poisonous dose of one of these alkaloids remains in the stomach, recourse should be had at once to the stomach-tube. Tannin or potassium permanganate may be added to the water used in washing the stomach, but the use of alkaloidal precipitants or of potassium permanganate does not obviate the necessity of emptying the stomach, for the precipitated alkaloid would be absorbed, though more slowly than the soluble salt, and one cannot be certain that the potassium permanganate has been brought into contact with all of the alkaloid. Excretion should be hastened through the use of diuretics, hot water and tea, and in urgent cases the intravenous injection of normal salt solution under suitable precautions would be justified.

Excessive doses of atropin or the other mydriatic alkaloids may prove fatal in a short time, but such amounts are seldom taken, and the physician is more frequently called on to treat the alarming symptoms which yield to treatment.

Pilocarpin stimulates the salivary and mucous glands, and relieves the dryness of the mouth and throat; morphin is useful only in the early stages of poisoning by atropin, not at all in scopolamin poisoning, in which it is directly contra-indicated.

If depression has already begun in atropin poisoning, or if the dose taken was sufficient to lead one to expect severe depression later, morphin is contra-indicated, or at most small doses should be used in the stage of excitement. Application of cold water or of the ice-bag to the head is useful during delirium. Respiratory failure demands artificial respiration, and in such cases vigorous means should be adopted to secure rapid elimination by intravenous injections of normal salt solution.

THERAPEUTIC USES

Atropin is useful as a respiratory stimulant in various conditions. It is often recommended in the treatment of morphin poisoning, but authorities differ widely in their views concerning the wisdom of this measure, and to a greater extent in regard to the dose which should be employed in any event. Atropin and morphin in small doses are antagonistic in their actions on the respiratory center, but they are synergistic in large doses, both causing depression. The difference in opinion results from the question whether atropin is capable of causing stimulation without subsequent depression, and if this be possible, the next question concerns the amount which can be given without causing severe depression.

It seems probable that moderate doses of atropin are useful in combating the action of a poisonous dose of morphin on the respiratory center, because there seems to be little danger of serious depression from such doses of atropin. The amount which can be given in such cases can hardly be stated in exact figures. If used for this purpose, it is best given in doses of about 1 mg. (1/60 grain). This is repeated every hour until three doses are given if each of the first two doses is followed by improvement in the respiration. This probably represents the maximum that can be given with safety, within a period of six hours. Caffein is safer than atropin and probably deserves the preference in all cases in which respiratory stimulation is required.

Atropin probably deserves to be used more frequently than it is in shock, because it is capable of increasing the heart-rate, when this is unduly slow, and this, with the action on the vasomotor centers, tends to increase the blood-pressure, and the stimulation of the respiratory center should further improve the condition. It would appear to be useful in respiratory and circulatory failure during anesthesia, for, according to Hewitt, cardiac failure during anesthesia is frequently secondary to interference with respiration.

Its use before the administration of chloroform will prevent the dangerous inhibition of the heart which sometimes occurs early in the course of the administration, before the heart is seriously injured by the direct action of the chloroform.

The therapeutic use of atropin as a mydriatic has been indicated in discussing its action on the pupil. It appears to be more certain than homatropin in causing complete paralysis of accommodation, but the latter is preferable as a mydriatic when there is reason to fear glaucoma, because it does not increase the intra-ocular tension so much as atropin. The prolonged action of atropin is preferred in iritis to prevent adhesions and to break up those already formed.

Excessive salivation, sweating from various causes, such as the use of large doses of the antipyretics, and the night sweats of phthisis may be controlled by very small doses of atropin. The application of ointment of atropin or belladonna does not appear to relieve local sweating. Its continued local application to the breast diminishes the flow of milk.

Atropin is used to increase the heart-rate, especially where this is abnormally slow (bradycardia) owing to overactivity of the vagus, but it has much less influence on the rate when this is due to cardiac disease, and when slow rhythm is due to heart-block atropin will not influence the rate. Certain forms of cardiac irregularities due to vagus control are abolished by atropin. Its action on the vagus is much less effective at the extremes of life because the vagus itself has less control over the heart-rate in the young and the aged than during the remainder of life.

Bronchial asthma resulting from spasm of the muscles is often relieved by atropin or one of the crude drugs of this group.

Atropin abolishes spasmodic contraction of the pylorus, and is useful in the treatment of lead colic in which spasm of the muscles of the intestine occurs, and in the same way it is useful in spasm of the muscles of the ureter and of the bile-ducts due to the irritation of calculi.

Atropin is useful in relieving certain neuralgias for which it is commonly applied locally.

Belladonna is used in whooping-cough, in which Cushny suggests that it may allay the excitability of the respiratory center.

Atropin is the physiologic antagonist of those poisons which exert their actions through stimulation of the parasympathetic (vagus, oculomotor, chorda, erigens) nerves, such as [illegible]arpin and muscarin, but it is not [illegible] in detail its actions in antagonizing these poisons. It has been found that animals survive a larger dose of aconitin if atropin be administered than without it. The cardiac effect of aconitin is attributable to vagus influence in part.

Drugs of the atropin group have long enjoyed a special reputation in the treatment of nocturnal enuresis in children, but there is no doubt that they have been used with little discrimination in many cases. Unfortunately, the causes of this condition are not sufficiently understood to enable one to say just when atropin will be useful. Under the circumstances it may be tried when hygienic measures have proved unavailing, but it should not be employed for any considerable period when it does not prove unmistakably useful.

There is no reason to suppose that all cases of nocturnal enuresis arise from the same cause, or that they can be relieved by the same treatment; but it is probable that when it results from an abnormally active reflex operating through the parasympathetic nerve to the bladder, atropin, or one of the other members of the group, may afford relief.

Occasional wetting of the bed by children probably results in some cases from delayed absorption of fluids from the alimentary canal and increased secretion of urine at such time as the sweat-glands of the skin are less active than usual. Atropin would probably aggravate the trouble in such cases.

The recommendation of drugs with such diverse actions as ergot, cantharides, buchu, rhus aromatica, strychnin and arsenic by a prominent writer serves to indicate the vagueness of our knowledge of this condition.

Hyoscyamus is sometimes preferred, probably acting better than belladonna in those cases in which nervousness plays an important rôle.

If belladonna or other drug of this group is used it is preferable to employ fairly large doses at once and abandon it if it does not afford prompt relief.

Hyoscyamus is generally reputed to be more useful than belladonna and stramonium as a sedative to the nervous system; stramonium is little used except as an ingredient of asthma powders, used for smoking.

Scopolamin hydrobromid has a special field of usefulness in quieting the excitement of the insane and producing sleep. It is more effective when given at night than during the day.

Some ophthalmologists prefer it to atropin as a mydriatic, because it is said to be less irritating and to produce a brief but complete dilatation of the pupil with paralysis of accommodation.

Its use with morphin in producing narcosis will be discussed after morphin has been considered.

Extract of belladonna is sometimes applied to the skin in the form of an ointment for the relief of neuralgic pain and for acute inflammatory conditions; the commercial belladonna plaster is widely used by the laity, but it is doubtful whether the belladonna contributes anything to the effect.

It is probable that all of the crude drugs and galenical preparations of this group are superfluous, and that with a better knowledge of the actions of atropin and scopolamin these alkaloids will replace the crude drugs and their galenical preparations as completely as quinin has displaced cinchona and its galenicals.

DOSAGE

The average dose of atropin sulphate is stated to be 0.4 mg. (1/150 grain), but there are many conditions for which this dose would be insufficient and others for which it would be too large.

The dose should be carefully graduated for the specific purpose for which the drug is intended, as one can then accomplish the desired effect with a minimum of side actions.

The smallest therapeutic doses of atropin commonly used are probably those which are added to the laxatives. The official compound laxative pill contains 8 mg. (1/8 grain) of extract of belladonna, or approximately 1/10 mg. (1/650 grain) of atropin. The largest doses commonly used internally are employed for relieving spasm of the intestinal muscle, in which case as much as 3 mg. (1/20 grain) may be needed.

To lessen sweating the dose is 1/4 mg. (1/250 grain); to paralyze the vagus endings in the heart, 1 mg. (1/60 grain); to antagonize morphin poisoning, 1 to 3 mg. (1/60 to 1/20 grain); but, as previously stated, there is considerable diversity of opinion concerning the advisability of the larger dose given here; to antagonize other poisons, such as aconite, pilocarpin, and other drugs which stimulate the autonomic nerves, the dose required will depend on the action elicited by the poison; since aconite stimulates the vagus, this should be paralyzed by atropin, and about 1 to 1.5 mg. (1/60 to 1/40 grain) should be used. Pilocarpin induces excessive secretion of the bronchial and salivary glands, the excessive bronchial secretion constituting a danger with overdoses of pilocarpin, and to antagonize this, 0.5 mg. (1/125 grain) atropin should be used.

Atropin is more effective in antagonizing pilocarpin than is pilocarpin in antagonizing atropin. Some persons appear to be remarkably susceptible to the action of atropin in inducing skin rashes. Dryness of the throat is commonly induced by doses of 1 mg. (1/60 grain) or over.

A dose of 0.2 mg. (1/300 grain) is said to stop the vomiting which small doses of morphin cause in susceptible persons.

Asthma resulting from spasm of the bronchial muscle, whatever the exciting cause, may be relieved by atropin in doses of 0.25 to 0.5 mg. (1/250 to 1/125 grain), repeated several times daily if necessary.

Belladonna and other members of the group are used in the form of cigarets for the relief of asthma. It is stated that the smoke of 4 gm. (60 grains) of stramonium in the form of a cigaret contains 0.4 mg. (1/150 grain) atropin.

Children bear atropin fairly well, and relatively large doses are frequently recommended in the treatment of whooping-cough, and such large doses are required if the depression of the respiratory center is the object to be attained.

As little as 1 drop of a 1:1,000 solution of atropin dropped into the eye will cause dilatation of the pupil, but stronger solutions are required to paralyze the muscles of accommodation, and 1 per cent. solutions are commonly employed for this purpose.

The average dose of scopolamin hydrobromid is 0.5 mg. (1/125 grain); much larger doses are sometimes required for quieting the insane, but even here caution must be shown for it may cause depression of respiration and a rapid fall in the blood-pressure, resulting in collapse.

For use as a mydriatic alone solutions of from 1:500 to 1:1,000 suffice, but where paralysis of accommodation is required, somewhat stronger solutions are necessary (from 1:100 to 1:250).

The average doses of the galenical preparations of the drugs of this group will be given in the discussion of the materia medica.

MATERIA MEDICA *

English authorities advise doses of the drugs of this group which we are accustomed to consider enormous; for example, Leonard Guthrie states that in the treatment of habitual nocturnal enuresis tincture of belladonna should be pushed to full doses, that is, to from 10 to 40 minims for a child of 10 to 12 years. The British tincture of belladonna is required to contain from 0.048 to 0.052 per cent. of alkaloid, or about 50 per cent. more than is required by the U. S. P.

Such doses may prove beneficial in cases of habitual nocturnal enuresis when the treatment in vogue in this country would fail, but such heroic treatment will certainly result in dryness of the throat, rashes and other disagreeable side actions and should not be used except in persistent cases when milder treatment has failed.

One will find formulas prescribing the drugs of this group in text-books which do not take into account the fact that the alkaloids of this group are prone to undergo changes and that we cannot foretell what changes will take place when one of the galenical preparations is mixed with alkaline salts and allowed to stand. A prescription of this nature

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* Owing to lack of space the materia medica of atropin, scopolamin, homatropin, belladonna, hyoscyamus and stramonium has been largely omitted. It will be included when this series is published in book form.

found in a standard work on therapeutics includes tincture of belladonna, potassium iodid, ammonium carbonate, potassium bicarbonate, camphor water and water.

Any tincture of this group is prescribed preferably alone except that it should be diluted (and flavored, if desired) so that the dose may be measured conveniently. The following illustrates the method of prescribing tincture of belladonna:

	c.c.	
℞ Tincturae belladonnae.......	4	fl ʒi
Syrupi aurantii.............	15	fl ʒiv
Elixiris aromatici....q. s. ad	30	fl ℥i

M. Dose: a teaspoonful.

The smoke of burning belladonna and stramonium leaves has been widely used by inhalation for the relief of asthma. The leaves are ground or granulated in order to prevent their burning with a flame, and a little potassium nitrate is commonly added to secure more uniform combustion. The mixture is burned on a plate, smoked in a clean pipe, or used in the form of cigarets.

W. J. Hadley advised the use of a mixture of equal parts of belladonna, hyoscyamus, and stramonium leaves and potassium nitrate as a fumigation, but there is no advantage in using a mixture of drugs containing such similar constituents, and any one of the leaves may be used with the addition of from one-eighth to one-fourth its weight of potassium nitrate. Half a teaspoonful of the mixture is used at each fumigation.

(To be continued)

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 247)

XVI

INFLUENZA: GRIP

Since the last epidemic of this disease in the United States in the winter of 1889 and 1890, there has been no year without the disease occurring in many parts of the country. In some regions it is present for months, sometimes occurring in small epidemics, at other times in isolated instances. Were the air-passage secretions to be examined in every case of cold and bronchitis, the influenza bacillus of Pfeiffer, discovered by him in 1892, would frequently be found.

While the well-known acute epidemic types of this disease probably always show this bacillus, it is not always discovered in instances that seem similar and are well termed grip or influenza, as distinct from an ordinary cold or bronchitis. Whether another distinct germ causes an inflammation of the air passages simulating influenza (that is, a closely related germ), or whether it is the same germ that has become so attenuated and changed that it is not recognized, has not been determined. To all intents and purposes, clinically and practically, these isolated cases without the true Pfeiffer bacillus should be considered as serious as though that germ were present and should be treated the same, as all of these cases seem readily to develop pneumonic conditions.

The toxin produced or elaborated by the influenza bacillus seems to be a vasomotor depressant, and perhaps acts through the sympathetic system. The small blood-vessels all over the body seem to dilate and produce capillary congestion, especially of the mucous membranes, the most frequent result being a coryza, a pharyngitis, a laryngitis or a tracheitis. The congestion in the larynx causes the harsh, dry, metallic cough which is quite characteristic of this type of influenza. The congestion and swelling of the mucous membrane of the trachea causes a peculiar oppressed feeling, with more or less pain, referred to the upper part of the sternum. The great amount of sneezing which occurs with a typical attack, almost similar to hay-fever, is due to congestion of the mucous membrane of the nostrils. The conjunctivae may also be injected, causing pain in the eyeballs and often a serous conjunctivitis, another typical symptom of influenza. In some seasons there seems to be a special tendency to middle-ear inflammations. At other times there frequently occurs a congested drum, with sometimes a hemorrhagic bleb or vesicle on the drum, a very painful though easily remedied condition.

The almost constantly present lumbar backache at the onset of this disease is probably due to congestion of the kidneys, and albumin is frequently found in the urine of such patients, and occasionally blood-corpuscles. A menorrhagia or a metrorrhagia may occur from the same tendency to dilatation of the blood-vessels. There may even be nosebleed, and occasionally a slight hemoptysis without any other assignable cause and without any subsequent development of tuberculosis or any other disease. With this disease, although the fever may be high, the skin is likely to be moist, and there may be profuse perspiration. The pulse may be slower than we normally expect from the height of the fever, and the blood-pressure is generally lowered; all of these conditions are due to the tendency of the blood-vessels to dilate. This dilatation of the vessels on the surface of the body, with the increased radiation and evaporation, causes the beginning high temperature of typical influenza to be short-lived, although for some days the temperature may rise regularly every afternoon and evening to a gradually decreasing degree.

The heart is generally weak from start to finish in this disease, and even collapse turns can occur. Also, during the first year of the last epidemic many persons were shocked by the disease and collapsed, having no fever and showing no symptoms except a weakened heart and circulation. This is the typical nervous type of the disease. The disease may also cause cerebral symptoms without many catarrhal symptoms, and sleeplessness, irritability and headache are very constant symptoms in all forms of grip; even meningitis can occur from this germ.

Rather an infrequent type of the disease is the bowel type; this can occur without respiratory catarrhal symptoms. Patients so affected have diarrhea, with more or less intestinal irritation, apparently the greatest amount of dilatation of blood-vessels in these cases occurring in the mucous membrane of the intestinal tract. These various types, the catarrhal, the nervous and the abdominal, may be interwoven, and a patient may show symptoms of all three.

The future of every case of influenza is prostration, nervous and muscular debility, with more or less circulatory weakness; in other words, there is exhaustion. The patient's resisting power is reduced, and any defect or diseased condition that he may have is aggravated by an intoxication with this germ.

If no complications occur, the convalescent patient should rest as much as possible, should not be subjected to exposure and should be given tonics, and, if necessary to cause restful sleep, for a short period at least, some hypnotic or some physical method of causing sleep. The most frequent complication is pneumonia, and the type of pneumonia that the influenza germ seems to cause most frequently is the lobular or bronchial pneumonic type; pneumonic congested areas may be found in different parts of one or both lungs. Not infrequently, however, true lobar pneumonia occurs.

The next most frequent complication, as suggested above, is middle-ear catarrh. The various sinuses in the region of the nostrils may become affected; all types of indigestion may occur, and not only sleeplessness and meningismus, but also a very serious meningitis, and even insanity can be caused by these germs and their toxins. Mental depression is a common occurrence, following severe attacks of grip. Pericarditis and endocarditis occur as complications of influenza.

It is thus seen that this disease should always be taken seriously, and every possible means used to prevent contagion, as it is one of the most highly contagious diseases. It spreads with great rapidity, but only by contact, although it may doubtless be transmitted by infected clothing, and perhaps even by letters, as when the last epidemic first reached America, the first persons affected in many cities were post-office clerks.

While no season is exempt from this disease, it occurs most frequently in colder weather, and in the colder climates, and in moist climates. Perhaps the more sunshine, the less frequent the disease. While one attack may protect a person for that season, he seems more susceptible to subsequent attacks in following years. There are doubtless many carriers of this disease who may have a persistent and continued subacute or chronic catarrhal infection and very likely are distributers of the disease to others. When one case occurs in a household, other members of the family become readily infected. The same is true in schools and in stores or buildings in which an infected person is closely associated with others. Many an office with one employee affected will soon, on investigation, show every other employee to be more or less seriously affected. While almost all persons are susceptible to this disease, a few seem to be immune. It is the most frequent of all definite infectious diseases.

Treatment

It having been determined or suspected that a patient has influenza, it is much more important that he remain in bed, or at least in the house, than if he has an ordinary acute cold. Also, it is more essential that he be more or less isolated or that measures be taken that he does not spread the disease by spraying from coughing or sneezing, and that he does not use the same towels, napkins, drinking-cups and eating utensils as other members of his family. The patient should be prohibited from fondling and kissing children. If the patient is a young child in close contact with the mother or nurse, all possible precautions to prevent contagion should be taken.

In a word, each family should be taught that grip is an infection, that it is contagious, that it spreads rapidly, that it may have serious complications and that it frequently leads to pneumonia, which has become in many regions of this country the most frequent cause of death. Therefore, even an apparently mild case of grip or influenza should be treated actively and energetically. As previously stated, whether a schoolchild begins with an acute cold or an influenza, he should be sent home and remain there until he is well, or at least almost well.

As a grip patient is liable to have a chill, or at least feel chilly or have cold sensations up and down the back, anything that makes him warm improves his condition. He may be given hot malted milk, hot tea or hot lemonade, at more or less frequent intervals, until his chilliness has ceased. The patient may be given a hot tub bath and then put into a warm bed in a warm room as an efficient means of making him comfortable and relieving his internal congestions. Hot water bags at the feet and extra coverings to the bed are often needed. A quickly acting stimulant is aromatic spirits of ammonia, given in half teaspoonful doses in hot water or hot lemonade, at intervals of three hours, for three or four times. The various methods suggested for aborting an acute cold may be used in this disease. Much greater care must be exercised, however, if the patient has the influenzal infection than if he has a simple cold, as to when he can return to his work or occupation, or be subjected to exposure to cold or dust, either in a house, building or outdoors.

As soon as the patient feels warm, the temperature may rise quite high, associated with severe headache, backache and irregular pains in other parts of the body. At this time a drug such as acetanilid, antipyrin, acetphenetidinum, or acetylsalicylic acid will be of benefit, provided that the patient is not ambulatory, and that he is not to be subjected to exposure. With this depressing infection such treatment is not wise unless a patient is in bed, or at least remains in the house.

The proper dosage of these drugs has already been suggested, and no one of them should be long continued. The most depressant is undoubtedly acetanilid, and perhaps the least depressant is acetphenetidinum. Should depression occur after one of these drugs has been administered or from the disease, circulatory stimulants such as aromatic ammonia, camphor or caffein should be given and the patient surrounded with dry heat. A hypodermatic injection of strychnin sulphate, 1/30 grain, may be given to stimulate the nerve centers. Cyanosis has not infrequently been caused by acetanilid, but an amount of this drug large enough to cause such a condition should never be given. The following prescription may be suggested:

		Gm.	
℞	Acetanilidi	0|50	gr. viiss
	Sodii bicarbonatis	1|0	gr. xv

M. et fac chartulas 10.

Sig.: One powder, with water, every two hours, except when the patient is sleeping.

Or:

		Gm.	
℞	Acetphenetidini	1|50	
	Phenylis salicylatis	1|50	āā gr. xxv

M. et fac chartulas 5.

Sig.: One powder every three hours.

It should be remembered, as previously noted, that it has been shown that an alkali like sodium bicarbonate inhibits the undesired action of coal-tar drugs on the heart; also, that caffein does not protect a heart from undesirable activities of the coal-tar drugs; in fact, it has been shown to intensify such activity.

In making a diagnosis of the infection present it is well to remember that any of these drugs, and also salicylic acid in any form, may cause eruptions on the skin, either erythematous or urticarial.

But little food is needed during the first twenty-four hours of grip, and it should not be pushed even on the second day, if food is repugnant to the patient. He should have plenty of water and such simple liquid nourishment as he desires. As soon as the appetite returns, food should be pushed. The various catarrhal conditions should be treated as suggested under coryza, pharyngitis and bronchitis. Also, while the patient is kept warm, he should have good fresh air in his room. This is essential with all infections, and especially with infections of the nose, throat and lungs. The bowels should be treated as indications call for. Simple laxatives may be given, if needed, or the soothing bismuth subcarbonate, if there is intestinal inflammation. Phenyl salicylate (salol) may be given, if there is much fermentation in the bowels, or the Bulgarian form of lactic acid bacilli may be given for a few days.

As soon as the patient begins to convalesce, he should be given tonics, and if there is no inflammation in the ears, quinin is valuable. Some form of iron should generally be given, and possibly a bitter tonic before meals. If the patient is not nervous, a small dose of strychnin three times a day is good treatment. On the other hand, it should be urged that strychnin stimulation is overdone, and a patient who cannot sleep should not be given strychnin or quinin later than the noon meal. Sometimes the sleeplessness following influenza is benefited by the administration of one-half to one teaspoonful of good fluidextract of ergot, taken an hour before bedtime. These patients should never be allowed tea or coffee after the noon meal, as they are very susceptible to cerebral stimulation by caffein and are likely to remain awake for hours from such stimulation. All disturbances or diseased conditions left over by grip must be treated energetically, else they tend to be prolonged. There are few germs that seem to be so tenacious and persistent, at least in their unpleasant results, as is the influenza bacillus. All persons are susceptible to serious consequences from influenza.

A schoolchild's desk, pencils, etc., and immediate surroundings should be thoroughly cleaned after the child has been sent home with an acute cold of any kind. This is especially necessary in cases of influenzal infection.

(To be continued)

Antituberculosis Expenditures in 1914.—On the authority of the National Association for the Study and Prevention of Tuberculosis it is asserted that $20,500,000 were spent in 1914 in the campaign against tuberculosis. Of this, 68.8 per cent. came from municipal, county and state or federal sources, which is said to indicate a most gratifying "shifting of the burden of institutional care of the consumptive from the private purse to the general public purse where it rightfully belongs." Five years ago the proportion contributed from the public sources named was only 53 per cent. The states leading in the amounts contributed were New York with $3,200,000; Illinois, $1,700,000; Pennsylvania, $1,600,000; Massachusetts, $1,200,000, and Colorado with $96,500. This is exclusive of contributions from private sources.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

LUETIN.—Luetin is an extract of the killed cultures of several strains of the *Treponema pallidum*, the causative agent of syphilis.

Actions and Uses.—When injected into the skin, luetin provokes no reaction in normal individuals except a very small erythematous area at and around the point of injection. In certain cases of syphilitic infection, a reaction occurs consisting of papules which may become pustules. When the reaction takes the papular form, a large reddish indurated papule (usually from 7 to 10 mm. in diameter) makes its appearance in twenty-four to forty-eight hours and slowly increases for four or five days, after which the inflammatory process begins to recede. The color of the papule gradually becomes dark bluish red. The induration disappears within two weeks, as a rule.

In the pustular form, after the fourth or fifth day, the inflammatory process increases in intensity and the papules become vesicular and later purulent. The pustules rupture spontaneously and the defect caused by the escape of the pustular content becomes quickly covered by a crust that falls off within a few days. A small induration sometimes remains for a few weeks or often months, leaving a small keloid after healing.

In the torpid type of syphilis the site of injection fades to an almost invisible point within three to four days, so that it may be erroneously considered a negative reaction. After ten days, or even longer, the spot suddenly begins to enlarge and goes through the same stages as seen in the pustular type.

Luetin is employed for the diagnosis of syphilis. It is of use in the examination of tertiary cases but rarely gives a positive reaction in the primary cases or in untreated secondary cases. In patients who are under treatment by mercury or salvarsan, the reaction is frequently positive even in cases which fail to give a positive Wassermann reaction.

Dosage.—The amount of luetin to be injected for one test is 0.07 Cc. The material should be properly diluted and injected into, but not under, the skin. A site should be selected on the skin in the upper arm, cleansed and sterilized and the injection made as described.

Pure cultures of several strains of the pallidum are allowed to grow for periods of six, twelve, twenty-four, and fifty days at 37 C. under anaerobic conditions. One set is cultivated in ascitic fluid containing a piece of sterile placenta, and the other in ascitic fluid agar also containing placenta. The lower portion of each solid culture in which a dense growth has occurred is cut out and the tissue removed. The agar columns which contain innumerable spirochetes are then carefully ground in a sterile mortar. The resulting thick paste is gradually diluted by adding, little by little, the fluid culture which also contains an enormous mass of the pure organisms. The dilution is continued until the emulsion becomes perfectly liquid. The preparation is next heated to 60 C. for thirty minutes in a water-bath, and then 0.5 per cent. trikresol is added. When examined under the dark field microscope, numerous dead pallida per field may be seen. Cultures made from this suspension remain sterile, and with them no infection can be produced in the testicles of rabbits. The suspension is kept in a refrigerator when not in use.

Non-Proprietary Preparation:

Luetin, Mulford.—This is supplied in a glass capillary tube provided with a special needle for the intradermal test containing sufficient for a single test, and also in packages containing sufficient for five tests, and in hospital size packages sufficient for fifty tests.

Manufactured by H. K. Mulford Co., Philadelphia.

GLYCOTAURO (See N. N. R., 1914, p. 52).

The following dosage form has been accepted:

Glycotauro Capsules, (half size).—Each capsule contains glycotauro 0.15 Gm. (2½ grains).

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SATURDAY, JANUARY 23, 1915

THE NEWER EXPERIMENTAL MEDICINE EXEMPLIFIED IN THE STUDY OF NEPHRITIS

It is one of the merits of the modern experimental medicine, which has departed from exclusive attendance at the bedside in order to enter the laboratories of the physiologist, physiologic chemist, pathologist, and pharmacologist, that it is rapidly learning to imitate human disease for purposes of study. A glance at the journals of scientific medicine of the present era discloses not merely the conventional recitals of clinical statistics, of case histories and necropsy reports, but also a newer type of contributions which are concerned with the effects of definite lesions induced according to a preconceived plan, or of pathologic states of organs or perverted metabolic processes initiated at will. Experimental injuries to the pancreas in animals have made possible the imitation of many features of human diabetes; operative interference with the organs within the cranial cavity has furnished a long-desired opportunity to study hitherto obscure diseases involving the pituitary gland and the cerebrospinal system; surgical obstruction of the gastro-enteric tract has duplicated the conditions of intestinal stagnation and so-called alimentary toxemia so as to reproduce symptoms of unexplained origin; intoxications with various drugs have furnished illustrations of disturbed nutrition associated both with upsets of chemical processes in the body and with the consequences of induced degenerative changes in important organs. The catalogue of these and numerous other instances of the distinctly modern method of approaching the problems of the damaged organism becomes the more impressive as one contemplates how recent such researches really are. Lee[1] has reminded us that it is scarcely more than half a century since the demonstrative teaching of Dalton, who came to the College of Physicians and Surgeons at New York in 1854, fresh from the inspiring laboratory of Claude Bernard, created much enthusiasm and inaugurated a new era for American students of medicine.

A recent American experimental contribution[2] to the understanding of nephritis, illustrative of the best type of investigation now being approached in many parts of the world by the newer paths of research medicine, may serve as an illustration of the fruitful results of the modern movement. The nature of the involvement of the kidneys and the rest of the organism in human nephritis has until lately remained nothing less than inexplicable, because with albuminuria as a constant and ever present symptom, the other factors of kidney function may be found to vary in every direction from that of hyperactivity on the one hand to that of extreme inefficiency on the other. With retention of all urinary waste products at one time, with unlike and unequal elimination of different excretory substances under other conditions, with evidence of involvement of organs other than the kidneys in still different circumstances, yet with all of these phenomena accompanied by certain similar clinical manifestations of nephritis, confusion has long reigned supreme.

Gradually, however, it has become possible experimentally to locate or reproduce any single factor at a time out of this bewildering complex of confusion. Experimental pathology has enabled us to localize a renal damage chiefly in the glomeruli or in the tubules, for example. Intoxication with salts of uranium, as is now well known, leads to the development of nephritic conditions. Uranium nephritis is generally classified as of the tubular type; but although the anatomic study of the kidneys usually does not demonstrate any pronounced involvement of the glomeruli, there is other evidence available of the existence of functional changes in the vascular glomerular apparatus which may pronouncedly modify the activity of the kidney. Mosenthal[2] has now demonstrated that it is possible to obtain illustrations of either nitrogen retention, increased nitrogen excretion, or any grade of variation between these extreme effects of the nephritis induced by uranium. Here we have the same ranges that may prevail in human cases.

With large doses of uranium, the nitrogen of the urine becomes diminished and is consequently retained. The quantity of urine may still be large, so that the retention of any urinary constituent cannot be charged to oliguria or anuria. Evidently a kidney insufficiency —an impaired power to eliminate nitrogenous compounds—is responsible for their retention in such cases. With smaller doses of the same poison the story is entirely different. Attending a distinct nephritis, as evidenced by the degree of albuminuria, there may be an unduly increased excretion of water, nitrogen, and sodium chlorid. Simultaneously sugar is present in the urine.

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[1] Lee, F. S.: The Relation of the Medical Sciences to Clinical Medicine, The Journal A. M. A., Dec. 12, 1914, p. 2083.

[2] Mosenthal, H. O.: Nitrogen Metabolism and the Significance of the Non-Protein Nitrogen of the Blood in Experimental Uranium Nephritis, Arch. Int. Med., December, 1914, p. 844. The literature on the subject is referred to.

How are we to explain these apparently contradictory phenomena? The diminished excretion is doubtless due to kidney insufficiency; the increased elimination, on the other hand, is due not to any previous retention, which has sometimes been maintained, but to an actually augmented protein destruction. Dosage, that is, the severity of the intoxication, determines the nature of the involvement. The situation is summarized by Mosenthal as follows: The laws governing the elimination of nitrogen in the urine in nephritis are not haphazard or "bizarre," but, such other factors as food intake, normal stools, etc., being constant, depend largely on three conditions: the degree of protein catabolism, the chemical combination in which the nonprotein nitrogen exists in the blood, and the permeability of the kidney.

The investigation of the feces, and particularly of the succus entericus, in some of these well-defined types of nephritis with retention, serves to dispel a widespread belief. The intestines do not supplement the functions of the kidney through vicarious excretion, simply because there is an abnormally large quantity of nitrogen to be eliminated. Each function largely follows its own laws independent, as far as possible, of its neighbor. Even when the urinary excretion is seemingly adequate, the causes of some of the symptom-complexes such as uremia may, according to Mosenthal's belief, lie in the many intermediary cycles of metabolism. In other words, nephritis may become something more than a purely renal or circulatory affair; and Mosenthal adds that human nephritis presents such a many-sided picture that it seems probable that many of the facts worked out for experimental uranium nephritis are applicable to it. The only claim that can be made for them at present, however, is that they be considered as suggestions on which to base further observations.

The frequently reported increase of non-protein nitrogen of the blood in nephritis—another bit of suggestive information acquired as the result of the newer experimental medicine—need not be due, as is so commonly believed, to the retention by an insufficient kidney. Mosenthal reminds us that we must consider further the possibility of inspissation of the blood, due to loss of water; increase of protein catabolism; and the chemical combination in which non-protein nitrogen exists in the blood. Heretofore, general attention has been paid only to the first of these.

In singling out an excellent research conducted under the auspices of the Edward N. Gibbs Prize Fund of the New York Academy of Medicine, we are not unmindful of the comparable studies in the same field of investigation reported in recent months by other workers, notably in American laboratories. Our emphasis is placed rather on an illustration of the promise of progress represented in the newer modes of attacking clinical problems.

GRADUATE MEDICAL INSTRUCTION

The article by Dr. Arnold[1] on graduate medical instruction published this week deals with one of the great present needs in medical education. The time for a careful development of graduate work in this country could never be more opportune, since physicians cannot for the present obtain such work abroad.

As stated in a recent report,[2] the objects of graduate medical instruction are: (*a*) to offer advanced instruction and opportunities for research; (*b*) to prepare physicians for special fields of work; (*c*) to offer opportunities for review and for keeping in touch with the advances in medical science, and (*d*) to make up any deficiencies in previous medical education. Courses meeting some of these purposes are offered by several of the undergraduate medical schools, although usually during the summer or at times, perhaps, when some physicians cannot well leave their practice. Graduate work is more satisfactory, however, if planned and given separately from undergraduate instruction. The physician who has developed an active practice usually realizes the lines along which he needs further instruction, and would gladly take advantage of any opportunities of perfecting himself, if he could do so without undue loss of time, in the few weeks or months he could occasionally spare. Graduate instruction is usually more convenient for the average physician, therefore, if concentrated courses in certain subjects are so arranged as to permit their completion in a comparatively short time. Again, it would doubtless be an advantage if, so far as possible, the various courses offered in any one subject could be scheduled at hours which do not conflict, so that the physician, if he desired, could profitably devote all his available time to any one specialty.

The needs and the convenience of physicians have apparently been given more careful consideration, and graduate medical instruction has reached its highest development, in those cities of Europe having single strong university medical schools and where all grades of instruction for physicians, both laboratory and clinical, are organized under a centralized control. In this country, by comparison, scarcely a beginning of an ideal scheme has been made. In many large cities no graduate work whatever is available; in a few others there are single graduate schools, but the clinical material is limited perhaps to that of a single hospital, or the work is too limited in its scope. In three or four other cities, instead of a single, strong, thoroughly well-organized graduate medical school, there are three or more separate and independent institutions. Such clinical material as is being utilized in these cities, therefore, is divided between these separate institutions, without any attempt to correlate the courses given by one school with the courses given in the others. Thus a physician's opportunities in each school are seriously limited, and if he seeks to take work in two or more different institutions, he finds that the desired courses in one school conflict with those he would like to take elsewhere.

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[1] Arnold, H. D.: The Problems of Graduate Medical Instruction, The Journal A. M. A., this issue, p. 329.

[2] Report of the Council on Medical Education to the House of Delegates of the American Medical Association, June, 1914, The Journal A. M. A., July 4, 1914, p. 87.

It is well known that, while a few of the graduate medical schools are doing good work, most of them are proprietary institutions conducted more or less as commercial enterprises. Hence the financial success of the institution, rather than the best interests of the physician seeking graduate instruction, too often dominates the management.

It is encouraging to note that certain universities are beginning to assume a responsibility for graduate medical instruction. Harvard and Tulane universities and the state universities of Minnesota, California and Alabama have established graduate medical schools, and other university medical schools are offering certain courses for graduate physicians. "Graduate medical instruction," as Arnold says, "should be on the same high plane as undergraduate teaching," and "should be under the control of good medical schools or universities."

Another step which may aid in the development of better graduate medical instruction is the establishing of central bureaus in New York, Philadelphia and other cities from which daily bulletins are issued showing what clinics are being held each day, when and where they are held and by whom, so that the visiting physician may attend those in which he may be interested. This scheme at least furnishes an introduction to some of the clinical work being done in each city, and may give many physicians a desire for further graduate medical instruction.

There is no greater need in medicine in this country to-day than a well-developed scheme for graduate medical work, the interests and convenience of the graduate student being ever borne in mind. Such a development would furnish the greatly needed opportunities whereby physicians could keep abreast of the improved methods of diagnosis and treatment, and enable them, in turn, to render better care to the patients depending on them.

CLINICAL DATA OF HUMAN RENAL DISEASE IN ELUCIDATION OF KIDNEY FUNCTION

Most investigations intended to solve the mystery of the renal secretion and disclose the mechanism whereby the urine is produced in the kidneys have depended on the study of animals. The human subject has been referred to far less frequently to elucidate the function of the kidneys, presumably owing to the complexity and intimate association of the different portions of these organs and the consequent difficulty in connecting an experimental finding with a definite anatomic structure. In recent years distinct progress has been made in differentiating the involvement of the different portions of the kidney brought about by the inroad of disease. Types of nephritis which are purely glomerular and such as are interstitial in character have become more easily recognized and distinguished. Fundamental differences in the location of the inflammatory disturbance are now known to be associated not only with distinct histologic appearances in the kidney, but also with clearly recognized clinical varieties of disease. The acute glomerular nephritis, such as may be observed in cases of scarlet fever, is frequently attended with almost complete suppression of urine; the localization of the inflammatory process in the interstitial tissue may present an entirely different urinary condition. If it were possible, therefore, to study the composition of the urine derived from kidneys for which the anatomic basis of the organs was precisely understood, the findings might throw light on the participation and respective rôle of the glomerular and tubular epithelium in the secretion of urine.

Such an investigation on man has been attempted by Dr. J. P. Kinloch[1] at the Ruchill Fever Hospital in Glasgow. His examination of the urine in various forms of nephritis indicates certain functions of the kidney. The glomerulus normally passes out by far the greater part of the water of the urine. This action of the glomerulus is in great part destroyed in glomerular nephritis. Thus a typical diminution in the quantity of urine occurs in the glomerular nephritis of scarlet fever and diphtheria, and this diminution is present at the very commencement of nephritis. In the glomerular nephritis of diphtheria, immediately after the initial diminution the quantity of urine steadily increases, and soon free excretion is in process, while in the glomerular nephritis of scarlet fever diminished excretion is long maintained. In the pure forms of interstitial nephritis in scarlet fever and diphtheria, on the other hand, no diminution of urine occurs other than can be explained by the elimination of an extra amount of water by the lungs and skin in the presence of pyrexia.

With respect to the elimination of the nitrogenous waste products, Kinloch advances the belief that the glomerulus may excrete a larger proportion of them than has hitherto been assumed. He remarks that this would explain the diminished nitrogen percentage and daily output in the acute period of glomerular nephritis in scarlet fever in cases in which the glomerular lesion is extensive. The retention of nitrogen might, however, be explained by supposing that it is dependent on secondary changes resulting from renal disease. The excretion of nitrogen appears to be unaffected by the degenerative changes found in the tubular epithelium. The anatomic evidence shows that there are secondary changes in this epithelium in the various types of nephritis, and this tubular change is most marked in interstitial nephritis, in which nitrogen elimination is free throughout the nephritis.

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[1] Kinloch, J. P.: The Excretion of Urinary Solids: A Chemical Study of Urine in the Nephritis of Scarlet Fever and Diphtheria, Jour. Path. and Bacteriol., 1914, xix, 77.

The phenomena connected with the renal elimination of other urinary components — chlorids, sulphates, phosphates — seem to be too complicated to permit any final tenable generalizations to be made at the present time. The foregoing studies are among the investigations now being undertaken in many clinical laboratories in which data furnished by human subjects are being used to elucidate the obscure behavior of the kidneys in health and disease.

U. S. PUBLIC HEALTH SERVICE REPORT ON A TUBERCULOSIS TREATMENT

The Journal has already referred to the investigation of the von Ruck treatment for tuberculosis that was being made by the Public Health Service in response to a resolution of the United States Senate. The report of these investigations has just been made public as Senate Document 641. This follows close on the report from the same service on the Friedmann treatment, and, as in the latter, the verdict has been that von Ruck's claims have not been substantiated.

On account of the evident practical difficulties in carrying out the studies on human beings, the investigation was largely confined to the attempt to confirm or disprove by animal experimentation the reliability and success of von Ruck's methods and practices in the production of immunity to tuberculosis. The studies were begun in Asheville at Dr. von Ruck's laboratory, but were later transferred to the Hygienic Laboratory in Washington, the reason given being that Dr. von Ruck would not concede the right of the government's representatives to conduct an independent and uncontrolled investigation, and summarily interrupted the investigation in Asheville. It would seem from the report that the von Rucks did not have sufficient confidence in their methods to be willing to be investigated unless they had supervision and control over the investigation, truly a remarkable stand for a scientist to take.

The pursuance and completion of the investigation seems to have been much facilitated by the fact that in their publications the von Rucks have claimed an experimental basis for their system of tuberculosis therapeutics. They claim that their "vaccine" has been evolved from data derived from animal experimentation and certain serum tests, and the results of its administration are claimed to be shown also by the same methods. It has been claimed that the vaccine is stable, but as is clearly shown in the report, it is "unstable, subject to deterioration, and is impossible of duplication with certainty." From this it would appear, therefore, that it cannot be standardized for practical purposes, since by the time the results of the protracted tests are known, deterioration may have occurred. It will be recalled in this connection that von Ruck had severely criticized the work of Dr. R. S. Cummings[1] as reported in The Journal, in which that author showed that immunity in guinea-pigs was not produced by treatment with the vaccine but that the susceptibility of the animals to tuberculosis was apparently increased as a result of the treatment with the vaccine. From the report to the Senate it would appear that this criticism was unjustified, and that the real reason for the failure of the guinea-pigs to be protected was not the failure to do certain "serum tests" but the deterioration (now admitted by von Ruck) of the vaccine, aside from the fact that it is questionable "if indeed it had ever possessed the immunizing properties which Dr. von Ruck thought to have demonstrated."

Guinea-pigs were not immunized against injections of tubercle bacilli by the use of the vaccine in doses recommended by von Ruck and continued for the length of time, and longer, which he claimed as adequate for the purpose. On the contrary, it was found that most of the animals so treated exhibited increased susceptibility. Von Ruck insists as one of the important links in his work that the immunity of the animals shall be demonstrated by serologic methods before the final tests by inoculation, but the incorrectness of this attitude is shown in the report where the statement appears, "This decisive test [the result of virulent inoculation], having shown that the animals were not immunized, it is a matter of indifference [to me] what degree of supposed immunity they might have shown by serological methods." The experiments made to demonstrate that the serum of persons or animals treated with the vaccine, and said by von Ruck to possess the necessary immune antibodies to destroy the virulence of tubercle bacilli, failed to confirm that claim.

It was not found possible to obtain direct evidence as to whether or not the vaccine would render persons in health immune to tuberculosis, but the report states that the indirect evidence on this point offered by Drs. von Ruck in proof of the success of the vaccine in producing immunity was faulty and inadequate. One of the most striking portions of the report is that which discusses the attempts made in von Ruck's laboratory by some one interested in the outcome of the experiments to alter the entries in the laboratory record book in regard to the use of controls in certain serum tests. Such an occurrence, as the report states, "had the effect of removing the entire test from [my] consideration as a scientific proceeding," and causes speculation as to whether the investigation was not desired for reasons other than purely scientific ones.[2]

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[1] Cummings, R. S.: Animal Experiments with von Ruck's New Tuberculoproteins, The Journal A. M. A., June 21, 1913, p. 1936.

THE SMEGMA BACILLUS

Since the search for the tubercle bacillus has now become an indispensable part of the routine examination of many types of clinical material, it is highly important to exclude every source of inaccuracy and every ascertainable possibility of error in diagnosis. The *existence of a cause of confusion in the* smegma bacillus has long been recognized by bacteriologists and well-trained laboratory workers, but the fact is not yet sufficiently appreciated by the physician at the bedside and in the clinic who furnishes the specimens for bacteriologic investigation. Indeed, we do not err seriously in asserting that far too little attention is as yet paid by practitioners to the proper collection and suitable preservation of the specimens intended for subsequent laboratory examination. Urine, sputum, blood, "smears" and comparable materials are in far too many instances transmitted to the clinical chemist and bacteriologist in a condition that is not complimentary to the intelligence or the technic of the physician responsible for their collection. Containers that are unclean and contaminated with unknown products of chemical nature, or that are unsterile and lead to abnormal decomposition and false diagnosis furnish a frequent source of annoyance to the expert who is expected to find in the "specimen" a correct answer to a clinical question. The average practitioner still needs to learn to treat his responsibility in the cooperative undertaking of laboratory clinical diagnosis more seriously.

The widespread existence of the smegma bacillus is a stumbling block in the path of diagnosis because the organism resembles the tubercle bacillus not only in its chief, and hitherto distinctive characteristic — its staining properties — but also in its morphology.[3] The smegma bacillus is found widely distributed over the surface of the human body. It appears in especially large numbers in any place where normal skin secretions are allowed to collect, as about the genitalia, under the foreskin in males, and between the labia in females, about the anus and the perineum, in the umbilicus, in the cerumen of the ear, about the teeth, etc. In this respect its occurrence is dependent on the degree of cleanliness of the patient. It also appears in the urine — more abundantly in females. This fact in particular emphasizes the possibility of a false diagnosis of genito-urinary tuberculosis, so that some writers have ventured the assertion that the confusion and difficulty encountered in the past in the bacteriologic examination of the urine where no account of the smegma bacillus has been taken has actually resulted in useless serious operations.

Fortunately, so far as the examination of the urine is concerned, the possibility of contamination of this secretion is not deep-seated. Smegma bacilli have never been found in the bladder or the deeper portions of the urethra. Some writers have therefore held that catheterization is sufficient to ensure exclusion of contamination of urine with extraneous smegma bacilli; but Young and Churchman[4] insist that the urine cannot be safely collected unless urethral irrigation is previously undertaken. The extreme importance of this feature will be realized in view of the statement of Brereton and Smith[1] that no method of differentiating the tubercle bacillus from the smegma organism by staining is entirely adequate for all cases, and the successful cultivation of the true smegma bacillus is open to question. According to these bacteriologists of the State Laboratory of Hygiene at the University of Wisconsin, however, by thorough cleaning of the genitalia, especially the meatus, and by catheterization, urine to be examined for tubercle bacilli can be collected with a fair degree of certainty of freedom from smegma bacilli. With such precautions, the finding of acid-fast organisms after decolorization with acid alcohol enables one to make a presumptive diagnosis of genito-urinary tuberculosis.

Final differentiation between the two types of bacilli can be made only by animal inoculation, according to Brereton and Smith. All investigators agree on the non-pathogenic character of the smegma organism. The animal experiment can thus be made the arbiter whenever uncertainty is encountered.

Current Comment

RURAL SCHOOL SANITATION

In 1911, the National Council of Education of the National Education Association appointed a committee on health problems in education. At the same time, the Council on Health and Public Instruction of the American Medical Association appointed a committee to cooperate with the National Education Association on this subject. These two committees, acting as a joint committee, have for three years been working in this field. The significance and practical value of the coordination of the efforts of the teaching and medical professions of the United States is apparent. The possibilities of such cooperation can hardly be overestimated. After careful consideration, the committee was unanimous in feeling that possibly the most important and certainly the most neglected field in school hygiene was the problem of rural school sanitation. When an effort was made to formulate plans and remedies, however, it was soon realized that although every one was agreed as to the paramount importance of this field, there was little, if any, definite information available regarding actual conditions. It seemed necessary, therefore, that before any remedies were proposed or even discussed, a reasonable amount of data should be secured. Fortunately these conclusions were completely in harmony with the views and policies of the United States Bureau of Education. As Hon. P. P. Claxton, the commissioner, was a member of the joint committee, it was possible to develop a plan for the study of rural school conditions in which all the forces interested could unite. During the spring of 1913, a field secretary employed by the joint committee made a careful statistical and photographic survey of about one hundred rural schools in four eastern states. At the same time, Prof. F. B. Dresslar of the Peabody College for Teachers of Nashville, Tenn., special agent of the federal Bureau of Education, was collecting a large mass of material on country schoolhouses in different states. Additional material was secured from various sources, principally through state boards of health. All of this information has been carefully collated, with the result that Bulletin 12 of the United States Bureau of Education, entitled "Rural Schoolhouses and Grounds," contains in its two hundred pages probably more information on this subject than has ever before been collected. For the details of this survey, the large mass of illuminating facts brought out and general conclusions drawn therefrom, the reader is referred to the report itself, which can be secured from the Bureau of Education at Washington. As a result of this study, the joint committee of the National Education Association and the American Medical Association has prepared a statement of minimum requirements for rural schools, being a summary of those conditions of location, construction and equipment which are the very least that should be tolerated in rural schools. This pamphlet can be secured from the Bureau of Education at Washington, from Dr. Thomas D. Wood of Columbia University, New York City, or from the American Medical Association. For the first time in the history of education and sanitation in this country, a reasonably comprehensive collection of facts regarding the sanitary condition of rural schools has been made and a standard of minimum sanitary requirements formulated. Parents, teachers, school boards, health officers and the general public have now been given a standard easily applied and within the physical and economic possibilities of any community. Adoption of this standard is the very least that can with decency and fairness to its children be expected of any community. As this standard becomes recognized through the distribution of these pamphlets, it will in a few years be possible to estimate the relative degree of development in any state by the condition of its rural schools. There are many other questions to be considered in solving the health problems in education, but persons interested in the sanitation of rural schools may feel gratified at the substantial and definite progress which has been made through the joint committee in the last three years in this field.

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[2] Copies of the report may be obtained by applying to the Chairman of the Senate Committee on Public Health and Quarantine, Washington, D. C.

[3] A review of this subject, with references to the literature, has lately been published by Brereton, G. E., and Smith, K. W.: Studies on the Smegma Bacillus, Am. Jour. Med. Sc., 1914, cxlviii, 267.

[4] Young, H. H., and Churchman, J. W.: Am. Jour. Med. Sc., July, 1905, p. 54.

THE LOCALIZATION OF SECONDARY TUMORS

Why secondary tumors are so frequently located at points of injury remains to be explained. The fact here concerned has often been noted. Recent observations by Jones and Rous[1] at the Rockefeller Institute for Medical Research show that in mice an acute injury caused mechanically to the peritoneum renders it more suitable for the lodgment and growth of mouse tumor. The injury caused, for example, by a smooth glass rod where it lies in contact with the peritoneum develops a condition favorable to tumor implantation. Evidently the resistance manifested by a healthy peritoneum to the lodgment and growth of tumor fragments is not due to a general immunity reaction, but is referable to the physical characters of the lining membrane; for the local injury renders susceptible the part of the peritoneum immediately affected and that part only. Jones and Rous remark that a connective tissue highly cellular and perhaps still proliferating as the result of injury may well elaborate the stroma for a tumor more rapidly than normal connective tissue. In support of this idea they cite the fact that connective tissue reacting to an injury grows profusely and almost immediately when incubated in plasma, whereas normal tissue from the same region shows usually no growth whatever. The New York investigators summarize their observations with the statement that the secondary location of tumors at points of injury may be attributed with good reason to the presence at such points of an active connective tissue capable of elaborating a stroma rapidly and abundantly, for it is the proliferation of the subendothelial connective tissue to form a supporting stroma that determines the fate of free tumor cells, whether these lie on the peritoneum or within a vessel.

SMOOTH MUSCLES AND HEAT PRODUCTION

That heat is a product of muscular activity seems to be so clearly demonstrated by the evidence of everyday experience that we naturally hesitate to dissociate in our minds the idea of work and heat as simultaneous products of the contracting muscles. We exercise on a cold day to keep warm. One frequently hears the familiar comparison of a muscle to a heat engine and is reminded of the high mechanical efficiency of the human engine, that is, the relation of work to the total energy expended. On closer analysis, however, it now seems not improbable that the two products of muscular contraction, heat and work, are independent though simultaneous in their origin, and that any proportion between is accidental. The efficiency of a heat engine is determined by the "difference of absolute temperature obtaining on two sides of the machine." Inasmuch as it is difficult to imagine even minutely localized changes of temperature in the animal body of more than a few degrees, we are now told that we must discard altogether the analogy of the steam engine and seek some other explanation of the mechanism by which the muscle is enabled to transmute the chemical energy of its food into work or heat. "The muscle is, in fact, not a heat engine, but a chemical engine." Despite these newer contentions in what has been termed the "energetics" of muscle, we have scarcely been prepared for the suggestion that smooth muscle may not even produce any heat at all when it contracts. It is recognized that the metabolism of contracting smooth muscle may be comparatively low; and it is thus seen how the accompanying heat production may be correspondingly low. The smooth muscle may even maintain its tension at the cost of much less oxidation of materials than does cross-striated muscle. Modern measurements of the gaseous metabolism point in this direction. But Professor Snyder[1] of the Johns Hopkins University has just reported, as the result of experiments involving extreme precision and elegance of measurement, that there may be an absence of any measurable amounts of heat production accompanying the development of tension after stimulation of a smooth muscle. We promptly call to mind the prominent part taken by smooth muscles in blood-vessels, in the gastro-intestinal tract and in the urinogenital system, and wonder whether, with Snyder, we shall be forced to "abandon the vaguer views physiologists have held" concerning the functions of smooth muscles.

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[1] Jones, F. S., and Rous, P.: On the Cause of the Localization of Secondary Tumors at Points of Injury, Jour. Exper. Med., 1914, xx, 404.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

COLORADO

Personal.—Dr. Augustus E. Greene, who was seriously injured in an automobile accident at Greeley in November, is convalescent and has returned to his home in LaSalle.——Dr. Charles A. Powers, Denver, is reported to be seriously ill with uremia in the Mercy Hospital.——Dr. Francis A. McNeill, Montrose, has been appointed surgeon for the Rico-Wellington Mining Company.

Medical Board Supplants Health Officer.—The county commissioners of El Paso County have named the following to take the place of the county physician, Dr. James H. Brown, Colorado Springs, recently resigned. Dr. Lewis H. McKinnie, Colorado Springs, surgeon; Drs. Leo W. Bortree, Colorado Springs, and Albert H. Peters, Colorado Springs, internists; Dr. Charles O. Giese, Woodmen, tuberculosis; Dr. Alexander C. Magruder, Colorado Springs, diseases of the eye, ear and throat, and Dr. Frank T. Stevens, Colorado Springs, alienist.

Medical Building Dedicated.—The Grabfelder Medical Building at the National Jewish Hospital for Consumptives, Denver, was dedicated, January 10. The building has been erected at a cost of $75,000 and is equipped with the most modern appliances. Mr. Samuel Grabfelder, Philadelphia, who has contributed more than $50,000 to the hospital, in addition to the gift of the medical building, made the presentation address. Rabbi William I. Freeman, founder of the hospital, responded and Dr. Moses Kleiner, Denver, delivered an address on "The Value of the Medical Building." The hospital now has ten buildings and has cared for more than 3,000 patients, two-thirds of whom are said to have been discharged cured.

IDAHO

Physician Exonerated.—The board of directors of the North Idaho Sanatorium, Orofino, after a searching investigation, have exonerated Dr. John W. Givens, superintendent of the institution, of the charges of neglect of duty, mismanagement and cruelty to patients, preferred by an attorney of Orofino.

State Board Criticized.—Moses Alexander, the new governor of Idaho who took office the first of the year, recommends consolidation of the State Board of Health and state dairy, food and sanitary departments, with a physician at their head, and says $32,000 would be ample to run them, or a saving of $31,140. He would retain the state bacteriological station in the capitol building, but would remove the chemical department to the state university at Moscow and would have done there the chemical work that now is done at the Lewiston normal, Albion normal and Academy of Idaho.

ILLINOIS

Loop Hospital Suggested.—Judge Charles N. Goodnow of the Chicago Morals Court has suggested that a hospital be erected in or near the loop to care largely for men, women and children found to be suffering from venereal disease.

Personal.—Dr. Leo M. Czaja, Chicago, sailed from New York, January 13, for work with the Servian Red Cross.——Dr. Charles W. Miller, Peoria, was injured January 12, in a collision between his automobile and a street car.——Drs. Albert M. Earel and Robert S. McCaughney, Hoopeston, have been appointed local surgeons for the Chicago and Eastern Illinois Railroad.——Dr. Anna Dwyer has been appointed a member of the Chicago Morals Commission, of which Dr. George B. Young, health commissioner, is a member ex-officio.

Chicago Victorious in Fight for Theater Ventilation.—A recent report in the *Bulletin of the Department of Health* calls attention to the fact that on Jan. 1, 1913, of 630 motion picture theaters in Chicago only 45 complied with the law as far as ventilation is concerned. On Jan. 1, 1915, the total number of theaters was 616, of which only 17 were still in operation while requiring alterations to make them comply with the law. The next problems to which particular attention will be turned are the ventilation of factories and transportation conditions.

Housing and Medical Arrangements of Industrial Concerns.—The committee on factories of the Chicago Tuberculosis Institute met at the City Club, January 19, to discuss the subject of "The Housing and Arrangements of the Medical Department of Industrial Concerns." At this meeting Charles J. Hatfield, executive secretary of the National Association for the Study and Prevention of Tuberculosis, delivered a short address dealing with his impressions of the tuberculosis situation in Chicago, based on his visits to the various tuberculosis institutions and especially the new Municipal Tuberculosis Sanatorium.

IOWA

Sanatorium for Clinton County.—Physicians of Clinton have endorsed the plan for a county tuberculosis sanatorium to be built at the poor farm at a cost not to exceed $5,000 and a committee was appointed to confer with the board of supervisors regarding the matter.

Personal.—Dr. G. Walter Barr, Keokuk, for several years publicity agent to the Mississippi River Power Company, Keokuk, has resigned.——Dr. M. Charles Mackin, Clarinda, first assistant superintendent of the Clarinda State Hospital, has been appointed superintendent of the State Inebriates Hospital, Knoxville, succeeding Dr. George Donohoe, Knoxville, promoted to superintendent of the State Hospital, Cherokee, succeeding Dr. Matthew N. Voldeng, Cherokee, promoted to superintendent of the new State Epileptic Colony, Woodward.

KANSAS

Trachoma on Reservation.—Dr. Robert S. Magee, Topeka, has reported to the State Board of Health as the result of an examination of 154 children on the Mayetta Reservation, 33 out of 105 white children and 31 out of 49 Indian children, were found to have well-marked cases of trachoma.

Sanatorium Opened.—The Tuberculosis Hospital at Norton has been completed and is ready to receive patients. It can accommodate at present sixteen patients, but expects that the next legislature will make an appropriation sufficient to build two more dormitories so that at least sixty patients may be cared for.

Spread of Small-Pox.—In Pratt, where small-pox has been spreading since September 1, 250 cases were reported early in December. Schools, churches and all other public gatherings have been ordered closed. No deaths were reported.——Over forty-five cases of small-pox are reported from Columbus, Cherokee County. The disease is in very mild form.

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[1] Snyder, C. D.: Is the Contraction of Smooth Muscle Accompanied by Heat Production? Am. Jour. Physiol., 1914, xxxv, 340.

MARYLAND

Urologic Clinic Open.—The James Buchanan Brady Urological Institute, established through the benefaction of the millionaire of that name, opened January 21. It is expected that later on, probably in the early spring, there will be dedication exercises. The new institute forms an impressive addition to Johns Hopkins Hospital group of buildings.

Personal.—Dr. James McFaddin Dick, Salisbury, underwent an operation for the removal of gall-stones at the Peninsula General Hospital, December 19.——The home of Dr. J. Carl Smith, Ellerslie, was seriously damaged by fire December 13.——Dr. Franklin P. Mall, Baltimore, professor of anatomy at Johns Hopkins Medical School, has been appointed head of the new department of embryology at Carnegie University, Washington, D. C.

Mentality Test in Child Labor Cases.—Arrangements have been made by the State Bureau of Labor Statistics to introduce a mentality test in determining eligibility of children applying for permits to work, that will not only diminish the danger of physical injury but will elevate the standards of child labor. Dr. James A. Nydegger, U. S. P. H. S., has been instructed by the government to cooperate with the bureau in this measure and all children applying for work will be subjected to the test. No permits for labor are given children under 14 years of age, other requirements being that they are physically sound and have received a rudimentary education.

Penitentiary Hospital.—The need of a new hospital at the penitentiary, where modern and sanitary treatment could be given the inmates, has just been realized. The old administration building has been remodeled and converted into a modern hospital. Laboratories, operating rooms, wards and adequate facilities for isolation have been installed. It has a tuberculous ward, open on all sides, allowing an abundance of air and sunshine to penetrate it. A roof garden has also been added to the building, affording the tuberculous patients constant outdoor life. The surgical outfit consists of a large operating room and all necessary sterilizing apparatus of a modern hospital in an adjoining room. The hospital kitchen has been fitted up to the latest idea of diet preparation.

Conference on Tuberculosis.—The governor has issued a proclamation announcing a conference on tuberculosis to be held at the State House, Annapolis, January 22 and 23, for the purpose of devising the proper course to follow in finally stamping out the white plague from the state. All public officers, health officers, physicians, nurses, county commissioners, and other officers of towns and cities are urged to attend the conference. The state is spending nearly $200,000 annually in maintaining sanatoriums for the treatment of this preventable disease. The facts and figures of the State Department of Health indicate that more than 8,000 people are suffering from this disease, and more than 4,000 new cases have been recorded in 1914. The records also show that 2,016 persons died from tuberculosis last year.

MINNESOTA

Contagious Department of Hospital Assured.—Work on the new contagious wards of the Minneapolis City Hospital, which had been suspended for several months on account of lack of funds, will now be taken up actively as the bonds necessary to raise the funds for the completion of four floors were sold January 7.

Leper Colony for Minnesota.—The Minnesota State Medical Society will ask the legislature the coming session, to set aside 10,000 acres in the northern part of the state on which to establish a colony for the segregation of lepers. It is said that there are now in the state fifty persons suffering from leprosy. The plan will also provide for the establishment of a branch hospital at the State University for clinical purposes.

Personal.—Dr. Samuel M. Kirkwood, St. Paul, who went to Montana on account of his health, has located on a ranch at Absarokee, Mont., and is reported to be improving.——Dr. Charles F. McComb, Duluth, has been appointed a member of the Advisory Commission of the State Sanatorium, Walker, vice Dr. James L. Camp, Brainerd.——Dr. John C. Staley, St. Paul, has been given a position on the staff of the American Hospital, Paris, and sailed for Europe, December 30.

NEW YORK

Plan for Better Health Work.—The State Public Health Council was received by the governor, January 12. Dr. Hermann M. Biggs, New York City, who headed the council, made an urgent plea for better health work.

Public Health and Mental Hygiene.—The State Hospital Commission which is charged with the supervision and control of the state hospitals for the insane is planning a campaign of prevention. During the past year 6,061 patients were received at the State Hospitals, of whom about one-quarter owed their breakdown to causes largely under their control. The plans of the commission comprise a series of short illustrated talks on mental hygiene to be delivered in different parts of the state, showing to the public the economic burden imposed on the state through insanity; the causes and prevention of insanity, and the problems of faulty heredity and environment. The plan also includes the giving of assistance to individuals in the form of advice as to how to obtain proper medical treatment and advice as to the maintenance of mental hygiene. The teaching and pathological branch of the service will be under the direction of Dr. August Hoch, New York City. The lectures will be given under the direction of the commission, with the approval of Health Commissioner Biggs, and correspondence with reference to dates for lectures is solicited with health officers and other readers of the *Health News.*

New York City

Protest Against Tooth-Wash Tax.—A committee of prominent New York physicians has been formed to petition congress to revoke the war tax on tooth washes and tooth pastes on the ground that such a tax is a severe blow to the work that has been done by state and municipal public health agencies in behalf of mouth hygiene. The committee has as its chairman Dr. Herbert L. Wheeler of the College of Dental and Oral Surgery, and includes Drs. Francis Delafield, Sigismund S. Goldwater, Thomas Darlington, Ernest Lederle, William S. Bainbridge, H. Holbrook Curtis, William Carr, Victor Hugo Jackson, O. Victor Limerick, William C. Deane, Frank E. Miller, Herbert D. Pease, William Gies and Edmund Prince Fowler.

NORTH DAKOTA

Personal.—Dr. Evan C. Stone, Balfour, while making professional call near that place, was thrown from his bugg in a runaway accident, fracturing his clavicle.——D Richard J. Church, Park River, has been appointed loca surgeon for the Great Northern System.——Dr. Thomas M. Stixrud, Litchville, has been appointed surgeon for the Fargo division of the Northern Pacific System.

Public Health Association Organized.—At a conference of city and county health officers of North Dakota held at Devil's Lake, December 16, in response to the call of Dr. Charles J. McGurren, Devil's Lake, secretary of the State Board of Health, the North Dakota Public Health Association was organized and the following officers were elected: president, Dr. Henry H. Healy; secretary, Dr. Alfred Dean, both of Grand Forks. A committee to outline desired changes in the present state laws was appointed, consisting of Drs. J. W. Cox, Charles J. McGurren, Devil's Lake; Darie Lemieux, Dunseith. It was decided to ask the state legislature for an all-time state health officer and that the State Board of Health should consist of five, including two laymen.

OKLAHOMA

New Hospital at State Penitentiary.—A new convict's hospital at the State Penitentiary, McAlester, is now completed. It has a capacity of fifty beds, with accommodations also for the physicians and nurses in charge and is under the direction of Dr. John W. Echols, the penitentiary physician.

Personal.—Dr. Percy A. Smithe, Enid, sailed for Europe December 19, to join the Red Cross Unit K Hospital at Vienna, as third assistant surgical director of the unit.——Dr. John W. Duke, Guthrie has been appointed state commissioner of health, succeeding Dr. John C. Mahr, Shawnee, who will open a private hospital in Oklahoma City to be known as the Hotel for Sick People.——Dr. David M. Lawson, Nowata, took a bichlorid of mercury tablet in mistake for a headache tablet recently, but prompt treatment placed him out of danger.

PENNSYLVANIA

Philadelphia

Gorgas in Philadelphia.—Dr. William C. Gorgas, Surgeon-General U. S. Army, will address the Philadelphia County Medical Society on the sanitary and hygienic question involving the construction of the Panama Canal, at the Manufacturers Club, January 27. Afterward there will be a reception and supper in honor of Dr. Gorgas.

Change in Title.—An important change in title has just been authorized by the management of the Friends Asylum for the Insane at Frankford, Philadelphia. In deference to advanced public sentiment, application is to be made to the courts for amendment of the charter of the institution so that it will henceforth be officially known as "The Friends Hospital."

To Charge Clinic Patients.—Declaring that the Polyclinic Hospital is being habitually deceived by persons well able to pay for treatment, the faculty committee has announced a new policy which became operative at all clinics after January 15. After this date all patients were required to pay a fee of 25 cents for the first visit and 10 cents for each subsequent treatment.

Contracts Awarded.—On January 15 Dr. S. Lewis Ziegler, Director of Health and Charities, awarded two contracts, one for constructing an observation building at the Municipal Hospital for Contagious Diseases and the other for a Nurses Home at the same institution; the former to cost $68,924 and the latter $51,890. The total cost for the observation house will be $86,346, and for the Nurses Home $62,755.

SOUTH DAKOTA

Hospital Almost Ready.—The new Sacred Heart Hospital, Yankton, erected at a cost of $150,000, is said to be nearly completed and ready for occupancy.

Move into New Offices.—On January 1, Drs. Leslie G. Hill, Charles S. O'Toole, William G. Magee and Olaf Haraldson, moved into a nine-room suite of offices on the second floor of the new Citizens' National Bank Building, Watertown.

TEXAS

Waxahachie Physicians and Dentists Organize.—The physicians and dentists of Waxahachie have organized the Waxahachie Medical Society and have elected the following officers: president, Dr. Dickson G. Thompson; vice-president, Dr. Louis H. Graham; secretary, Dr. Seaborn H. Watson, Jr.

Banquet to Southern Surgeon.—Dr. Bacon Saunders, Fort Worth, newly elected president of the Southern Surgical and Gynecological Association, was the guest of honor at a banquet at the Westbrook Hotel, Fort Worth, December 29, given under the auspices of the Tarrant County Medical Society. Dr. Ira C. Chase, Fort Worth, officiated as toastmaster.

Personal.—Dr. Morris H. Boerner, Austin, state director of the Texas Hookworm Commission, has tendered his resignation to take effect January 15. He expects to go east to pursue graduate study.——Dr. Bascom Kavanaugh, while standing in front of his home in San Augustine, January 6, was shot and dangerously wounded.——Dr. Harold L. Warwick, Fort Worth, has returned from abroad.——Dr. Herschel G. Thomas is said to be seriously ill with pneumonia at his home in Handley.

WASHINGTON

Personal.—Dr. Albert E. Stuht, Spokane, has been elected physician of Spokane County.——Drs. Edward J. Stubbs and Robert D. Forbes, Seattle, have been commissioned as lieutenants in the Royal Army Medical Corps and assigned to duty at the training camp, Bedford, England.——Dr. Olaf T. Melde, Spokane, is ill with inflammatory rheumatism at his house.

Sanatorium Notes.—The Board of Health of Spokane County has approved the plans for the county tuberculosis sanatorium to be erected two miles east of Spokane, at a cost of $50,000.——The first unit of the Seattle City Sanatorium, erected at a cost of nearly $250,000, has been completed. It consists of one hospital building, one children's building, an administration building and a power plant, and will accommodate nearly 200 patients. The city council has allowed $95,000 for the maintenance of the sanatorium for 1915.——A contract for the Edgecliff County Tuberculosis Sanatorium has been awarded for $75,000, and the work is to begin at once.——The new Pierce County Tuberculosis Sanatorium, at Lake View, opened to receive patients, January 4.

WISCONSIN

Medical Women Incorporate.—The Wisconsin Medical Women's Society filed articles of incorporation with the secretary of the state, January 7. The organization has no capital stock and the incorporators are, Drs. Carrie A. Frost, Chippewa Falls, Mary Piper Houck, La Crosse, Helen A. Binnie, Milwaukee, and Maud F. Pratt, Appleton.

Diagnostic Stations to Be Established.—A committee has been appointed by the Milwaukee Medical Society to cooperate with Health Commissioner George C. Ruhland in establishing diagnostic medical stations throughout the city. The plan has been endorsed by the City Club and the school board has signified its willingness to allow public school buildings to be used for this purpose.

CANADA

Queen's University and the War.—No university in Canada has done any better for the war than has Queen's University, Kingston. More than eighty officers and men will go with the second contingent. The faculty of applied sciences especially has been well to the fore.

Talks in Interest of Wounded.—Dr. Brown-Landone, who has been in Toronto in the interests of the wounded from the north of France, addressed the Academy of Medicine on January 15. Transportation difficulties as well as lack of medical and surgical supplies, as dressings, bandages, surgical instruments, etc., occupied most of his attention. At the conclusion a committee of the academy, composed of a member from each hospital staff in the city was organized for the purpose of collecting supplies and forwarding them to Havre, France.

Medical Council Elections, Ontario.—The following are the territorial representatives elected to the Ontario Medical Council: Drs. George R. Cruickshank, Windsor; George M. Brodie, Woodstock; James MacArthur, London; Arthur T. Emmerson, Goderich; John J. Walters, Berlin; Samuel McCallum, Thornbury; Herbert S. Griffin, Hamilton; Eldridge T. Kellam, Niagara Falls; Robert H. Arthurs, Sudbury; Alexander D. Stewart, Fort William; Edmund E. King, Toronto; Herbert J. Hamilton, Toronto; Ferdinand A. Dales, Stouffville; Thomas W. H. Young, Peterboro; Thomas S. Farncomb, Trenton; William E. Spankie, Wolfe Island; William E. Crain, Crysler; J. Fenton Argue, Ottawa. In addition to these the collegiate representatives number six and the homeopathic five.

Personal.—Dr. Andrew Hunter has been appointed to the professorship of chemical pathology in the University of Toronto, replacing Prof. John B. Leathes, Toronto, who recently resigned to go to the University of Sheffield, England.——The Hon. Dr. Henri S. Beland, St. Joseph, Que., who was a member of the Laurier government, was thrice wounded by shell splinters while attending the wounded at Antwerp. A Belgian writing to Canada speaks of Dr. Beland's good work and of "Your brave Canadian, whose services will never be forgotten by many of our force."—Dr. Perry E. Doolittle, Toronto, has been appointed chief commandant of the war automobile organization.——Dr. Oswald Dinnick, formerly of Toronto, but for a number of years practicing in London, England, has resigned his position in a prominent London hospital and gone to the front with the R. A. M. C.——At the suggestion of Sir Ryckman Godlee, Dr. Herbert A. Bruce, Toronto, has organized a Canadian Belgian relief committee for the benefit of the Belgian doctors and pharmacists. Dr. P. Walter H. McKeown, Toronto, is secretary of this committee and Dr. D. J. Gibbs Wishart, Toronto, treasurer. The Canadian professions of physicians and pharmacists are being appealed to for contributions to this cause.

GENERAL

Congress on Local Anesthesia.—A clinical congress for the study of local, spinal and scopolamin-morphin anesthesia will be held in Chicago, January 26 to 28. Evening sessions will be held in the rooms of the Chicago Medical Society, 25 East Washington Street, sixth floor, and clinics will be held at Cook County, Polyclinic, Post-Graduate, Presbyterian, Alexian Brothers and Mary Thompson hospitals and the Illinois Medical School.

The Cutter Lectures.—The Cutter Lectures in Preventive Medicine for the year 1915 will be given at the Harvard Medical School by Dr. Victor C. Vaughan, professor of Hygiene and Physiologic Chemistry and dean of the School of Medicine and Surgery of the University of Michigan, and Dr. Joseph Goldberger, Surgeon, United States Public Health Service, Washington, D. C. Dr. Vaughan will lecture on "The Phenomena of Infection" on April 14, 15 and 16. Dr. Goldberger's subject will be "Diet and Pellagra" and will be given in one lecture April 2. These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine, and that they should be delivered in Boston, and be free to the medical profession and the press. Others interested are cordially invited.

Bequests and Donations.—The following bequests and donations have recently been announced:

Home for Crippled Children, Philadelphia, $10,000; Episcopal Hospital, Philadelphia, $5,000 by the will of Letitia H. Harrison.

St. Louis Medical Society, $42,813.39, by the will of Mrs. Franzisca Bartscher in memory of her husband, Dr. Hugo W. Bartscher.

Jewish Hospital, Philadelphia, contingent bequest of $6,000 by the will of Caroline Solomon.

To build a sanatorium at Hot Springs, Ark., Dr. W. G. Choate has been bequeathed $57,000 by Patrick Fenton of Knoxville, Ia.

Presbyterian Hospital, Chicago, $50,000 to be known as the Albert Arnold Sprague endowment; Chicago Orphan Hospital, $5,000 by the will of Albert A. Sprague.

Philadelphia Hospital for the Treatment of Contagious Diseases, $50,000, the fund being devised "to any hospital in Philadelphia which shall be devoted to the treatment of contagious diseases, for the purpose of endowing a ward therein, to be called the Hope Memorial Ward, and in case there shall be no such hospital in the city, at the time of my death, or no hospital which will accept such a legacy on these terms, I then give the said fund to the Episcopal Hospital." Eleven hospitals entered claims for this bequest; Presbyterian Hospital and German Hospital, Philadelphia, each one-fifteenth part of the estate, by the will of James F. Hope.

Germantown Dispensary and Hospital and St. Timothy's Hospital, Roxborough, each $10,000, by the will of Helen Louise Merrick.

Jewish Hospital, Philadelphia, $4,000 contingent bequest by the will of Adam E. Wiegand.

Jewish Hospital, Philadelphia, $3,000 by the will of Annie Price.

State Charities Aid Association, St. John's Guild, New York Nursery and Children's Hospital, each $7,500; New York Infirmary for Women and Children, Babies' Hospital, New York Association for the Blind and Manhattan Eye, Ear and Throat Hospital, each $5,000 by the will of Augustus Cleveland Brown.

St. Luke's Hospital, New York City, $7,000 by the will of Sophia Frances Scott.

FOREIGN

Small-Pox in Vera Cruz.—The state department on January 6 received news that small-pox had broken out in Vera Cruz, Mexico.

Jail Sentence for Slandering Physician.—The penalty of one month's imprisonment was promptly inflicted on a workingman recently, in Germany, for stating that a certain physician had made out a fraudulent death certificate. The workingman's appeal to a higher court, the Reichsgericht at Leipzig, was rejected.

New Japanese Institute for Infectious Diseases.—Dr. Shi-asaburo Kitasato announces that he is no longer director of the Imperial Institute for the Study of Infectious Diseases, home department of the Japanese government. With associates he has severed his connection with the institute and started a new private institution, named Kitasato Institute for Infectious Diseases, Tokyo at Sankocho, Shibaku, Tokyo. Those who will act as directors of laboratories in the institute are: Drs. Taichi Kitashima, Kiyoshi Shiga, Sahachiro Hata, Mikinosuke Miyajima, Shinkichi Umeno, Yutaka Teruuchi and Shigeru Kusama.

Deaths in the Profession Abroad.—Lothar von Frankl-Hochwart, professor of pathology of the nervous system at the University of Vienna, a pioneer in research on neuropathology, especially the physiology and pathology of the hypophysis, bladder and on internal secretions. His death was the result of a tumor in the brain, a subject to which he had devoted years of special research.——Dr. Magen of Breslau, editor of the *Aerztlicher Vereinsblatt*, a leader in matters affecting the economic welfare of the profession, aged 50.——M. Heyde privat-docent of surgery at the University of Dresden, succumbed to typhoid at the front, aged 34.——F. Sasse, who took Rehn's place as chief of the surgical service at Frankfurt a. M., died December 15 from the results of a scratch on the finger at an operation four weeks before, aged 48.

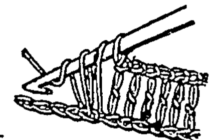
WAR NOTES

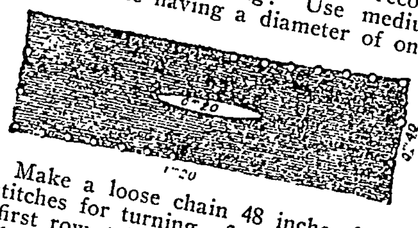
Spinal Meningitis and Diphtheria in the Salisbury Plain Camp.—Six cases of spinal meningitis are reported as occurring in the camp of Canadian soldiers in Salisbury Plain. The Fifth Royal Highlanders are quarantined on account of diphtheria. The situation is not regarded as serious in respect to either disease.

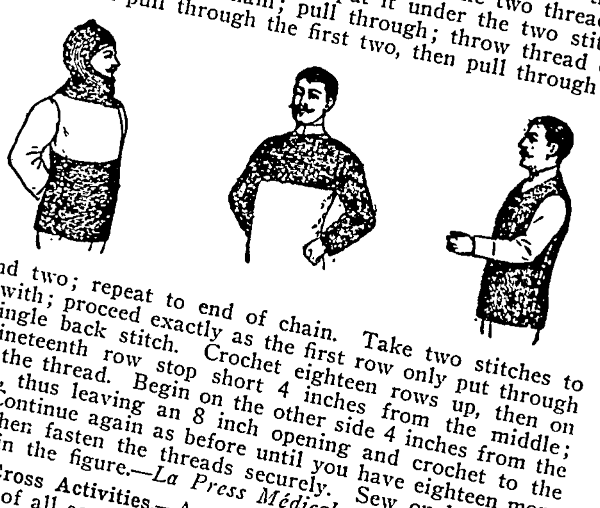
Exposition Showing How the Wounded are Cared For.—An exhibition of models, photographs and diagrams, showing the whole plan of the organized care for the wounded at the front has just been opened at Berlin. The exhibition is in the cupola hall of the Reichstag building and was opened in December with considerable ceremony. From the trench to the convalescent home, the course of the wounded soldier is shown, as also the general arrangements and aspect of a battle field and of a naval battle.

"Michelaines" for the Soldiers.—Dr. Michel, the inventor of the well-known Michel skin clips, has devised a knitted scarf which can be used as a head, throat, chest or arm protector. It consists essentially of a woolen band 48 inches long and 16 inches wide, with a median slit 8 inches long, large enough for the soldier's head to pass through.

The particular crochet stitch which Dr. Michel recommends for this purpose is the following: Use medium sized wool and a crochet needle having a diameter of one-fourth of an inch. 1. Make a loose chain 48 inches long. 2. Crochet two extra stitches for turning. 3. Throw thread over needle. For the first row, take up the two threads of the chain, throw thread over, put it under the two stitches of the first loop of chain; pull through; throw thread over again, then pull through the first two, then pull through the second two; repeat to end of chain. Take two stitches to turn with; proceed exactly as the first row only put through the single back stitch. Crochet eighteen rows up, then on the nineteenth row stop short 4 inches from the middle; break the thread. Begin on the other side 4 inches from the middle, thus leaving an 8 inch opening and crochet to the end. Continue again as before until you have eighteen more rows, then fasten the threads securely. Sew on buttons as shown in the figure.—*La Press Médicale*, Nov. 19, 1914.







Red Cross Activities.—Another large shipment of hospital supplies of all sorts was shipped to Budapest and Vienna by the American Red Cross, January 17, on the steamer *Finland* from New York. The supplies will go via Genoa, Italy, and are consigned to the American Red Cross surgeons and nurses in Austria-Hungary.——The American Red Cross has ordered 17 light automobile ambulances, 12 of which have been given by Yale University and the other 5 by Harvard University. The Yale ambulances will have in Yale colors the inscription, "From the Students of Yale," and the Harvard machines will have in crimson the inscription, "From the Students of Harvard." Painted on the tops will be large red crosses on a white ground. These ambulances will be equipped to carry two wounded soldiers each.——A consignment of twenty cases of hospital clothing and 100 bales of absorbent cotton and bandages sent to the central committee of the German Red Cross in Berlin, has been received.——Dr. Sofie Nordhoff-Jung, associate manager of the American Red Cross Hospital, Munich, acknowledges the receipt of a large quantity of hospital supplies sent by the American Red Cross, including absorbent cotton, gauze, bandages, hospital clothing, etc.——It is reported from Servia that every available building in all the towns near the front has been converted into hospitals and that still wounded soldiers must sleep sometimes on floors in corridors and sheds and that on account of the lack of bandages and gauze, wounds can be dressed only every three or four days. Surgeons are working eighteen hours a day and nurses and local surgeons are laboring to the point of exhaustion. There are 100,000 wounded Servians and Austrians in Servia. There is a lack of absorbent cotton and hospital supplies of all kinds.——The British Red Cross has provided a hospital unit of thirty persons and $20,000 worth of supplies which are being conveyed to Salonica by Sir Thomas Lipton on his yacht.——The American Red Cross on request of Madame Vandervelde, has ordered six sterilizing outfits for the Belgian Red Cross.

Aid for Belgian Physicians.—Dr. F. F. Simpson, treasurer of the committee of American physicians for the aid of the Belgian profession reports that in his stirring appeal for aid for the Belgian physicians, Professor Charles Jacobs of Brussels states that 1,000 doctors are poverty-stricken, and that 2,000 to 3,500 doctors are suffering cruelly through this war. That 2,000 physicians need to be supplied the necessities of life would seem a low estimate. It seems probable that the physicians' families will average four members. That means that 8,000 members of physicians' families are dependent on outside contributions. Four dollars and forty cents will supply sufficient food to sustain life for four for one month. Belgian physicians and their families, therefore, absolutely need at least $8,800 worth of food every month. For the first month contributions of American physicians aggregated $1,414. Will the medical profession of America accept its opportunity and meet its share of this responsibility by prompt and repeated contributions?

Every cent of every dollar contributed will be available for the purchase of supplies as the carrying charges are provided for by the American Commission for Relief in Belgium. The first one thousand dollars contributed have been expended by the executive committee for food and supplies, and the packages properly labeled have been started for their destination.

The full list of names of all contributors up to and including Jan. 16, 1915, follows:

CONTRIBUTIONS

Union Trust Company, Pittsburgh, Pa.	Banking Facilities
Sterrett & Acheson, Attys., Pittsburgh, Pa.	Professional Service
Dr. Frank Overton, Patchogue, N. Y.	$ 25.00
Dr. Franklin H. Martin, Chicago, Ill.	100.00
Dr. F. F. Simpson, Pittsburgh, Pa.	100.00
Dr. S. Peskind, Cleveland, Ohio	25.00
Dr. and Mrs. George C. Smith, Mansfield, Ohio	5.00
Dr. Samuel Ayers, Pittsburgh, Pa.	20.00
Dr. Edwin Walker, Evansville, Ind.	25.00
Dr. Boleslaw Lapowski, New York, N. Y.	10.00
Dr. Thos. E. Satterthwaite, New York, N. Y.	20.00
Dr. Thomas L. Stedman, New York, N. Y.	25.00
Dr. Richard E. Eustis, Boston, Mass.	10.00
Dr. Mark W. Richardson, Boston, Mass.	10.00
Dr. Wm. Allen Pusey, Chicago, Ill.	25.00
Dr. M. C. Shelton, Joplin, Mo.	5.00
Dr. Henry F. Walker, New York, N. Y.	25.00
Dr. Boyd Cornick, San Angelo, Tex.	2.50
Dr. David W. Cheever, Boston, Mass.	25.00
Dr. Virgil P. Gibney, New York, N. Y.	25.00
Dr. John B. Murphy, Chicago, Ill.	100.00
Esther F. Boland, Boston, Mass.	5.00
Dr. Chauncey W. Norton, Saranac Lake, N. Y.	25.00
In Memory of H. H. C., Boston, Mass.	10.00
Dr. S. J. Meltzer, New York, N. Y.	15.00
Dr. David Bovaird, New York, N. Y.	25.00
Evelyn G. Manter, Winthrop, Me.	10.00
Dr. L. Maude Warren, Baldwinsville, Mass.	5.00
Dr. Ambrose Talbot, Kansas City, Mo.	10.00
Dr. J. G. R. Mainwaring, Flint, Mich.	25.00
Dr. James C. Thompson, Pittsburgh, Pa.	25.00
Dr. Lowell C. Frost, Hollywood, Cal.	10.15
Emma T. Frost	10.15
Dr. F. W. Stetson, Boston, Mass.	10.00
Dr. Guy L. Hunner, Baltimore, Md.	25.00
Dr. George E. Lyon, Moweaqua, Ill.	5.00
Dr. Edward E. Krumbhaar, Philadelphia, Pa.	10.00
Academy of Medicine, Cincinnati, Ohio	100.00
Dr. David S. Moore, Birmingham, Ala.	10.00
Dr. C. M. Banks, Springfield, Tenn.	1.00
Marion Co. Medical Soc., Marion, Ohio	25.00
Dr. Henry M. Swift, Portland, Me.	10.00
Dr. E. H. Mackay, Clinton, Mass.	5.00
Dr. R. O. Raymond, Flagstaff, Ariz.	10.00
Dr. J. H. Bertrand, DeForest, Wis.	5.00
Dr. E. S. Reedy, Seattle, Wash.	5.00
Dr. and Mrs. H. C. Wetherill, Denver, Colo.	50.00
Dr. Burnley Lankford, Norfolk, Va.	3.00
Dr. Charles W. Allen, Hoboken, Pa.	5.00
Dr. Wm. Van V. Hayes, New York, N. Y.	25.00
Drs. Parker and Parker, Peoria, Ill.	5.00
Dr. Heman B. Chase, Hyannis, Mass.	10.00
Dr. John B. Wheeler, Burlington, Vt.	25.00
Dr. Stuart McGuire, Richmond, Va.	50.00
Dr. John G. Clark, Philadelphia, Pa.	50.00
Dr. F. R. Underwood, Seattle, Wash.	5.00
Dr. Abraham Jacobi, New York, N. Y.	100.00
W. A. M., Ossining, N. Y.	2.00
Dr. Theodore C. Janeway, Baltimore, Md.	15.00
Dr. Isaac M. Heller, New York, N. Y.	5.00
Dr. S. H. Miller, Joplin, Mo.	5.00
Dr. B. F. Saylor, Redding, Cal.	10.00
Dr. J. Wolf, Pittsburgh, Pa.	10.00
Jasper Co. Medical Society, Joplin, Mo.	10.00
Dr. Sidney A. Chalfant, Pittsburgh, Pa.	10.20
Dr. Frederick Abbe, Boston, Mass.	10.00
Dr. J. Riddle Goffe, New York, N. Y.	25.00
Dr. Henry F. Graham, Brooklyn, N. Y.	5.00
Total	$1,414.00

EXPENDITURES

450 boxes of food purchased from Austin, Nichols and Co., at $2.20 per box	990.00
Balance	$ 424.00

LONDON LETTER

London, Jan. 1, 1915.

The War

THE DISLOCATION OF PRIVATE PRACTICE

Owing to the large number of physicians withdrawn from private practice for service at the front, and the still larger number required for the great army in training in this country, considerable dislocation has been caused in civil practice. The General Medical Council has submitted to the War Office proposals to avoid as far as possible the resulting inconveniences to the civil population from deficiency of medical service, and to the physicians from change of station. These proposals have been accepted. In order that medical officers may as far as possible be able to give part of their time to civil practice in their own districts, the following regulations have been adopted by the War Office: 1. When a mobilized territorial unit is moved from its own locality in Great Britain: (*a*) The medical officers may be allowed to effect exchanges, direct or indirect, with territorial medical officers in the new locality when possible. (*b*) If this is not feasible, the places of medical officers not desiring to accompany their units may be taken by junior medical officers willing to take temporary commissions and serve with such units, the original medical officers being demobilized until the return of the units to their own localities, or until their services can be otherwise utilized there. 2. When a mobilized territorial unit volunteers for imperial service abroad, the medical officer will be given the option of accompanying it or serving with the reserve unit raised for home defense in its stead, vacancies in both units being filled up by junior medical officers with temporary commissions. To facilitate such exchanges, a list is kept at the War Office of junior practitioners willing to accept general service either at home, in the field, or abroad from which substitutes can be detailed as occasion arises. The medical officers themselves might be of assistance in procuring substitutes to take their places possibly from their own neighborhoods, whose names would be placed on the list.

THE BELGIAN "ODYSSEY"

A committee appointed by the British government has issued a report on the reception and employment of the Belgian refugees in this country. It has given a most interesting historical survey. At first the Belgians moved to the nearest place of refuge still held by their army. Gradually, however, they were pushed back to the frontiers, and began to seek shelter in neighboring countries. From first to last it has been calculated that about a million refugees—nearly a sixth of the total population—have abandoned Belgian soil. Of these, Holland received the largest share, 500,000 or more; a large number, especially from the Ardennes and the southern provinces, fled to France. In England about 110,000 arrived and arrangements are being made to bring over more from Holland to relieve the excessive pressure prevailing there. It is characteristic of our national ways that the duty of attending to the refugees should have been undertaken by voluntary organizations. But, however willing private individuals might be to undertake the national duty of relieving the distress of our allies, it soon became evident that the task was assuming such gigantic proportions that no voluntary organization could cope with it. The government then stepped in and offered the refugees the hospitality of the British nation. In one week alone, after the fall of Ostend, 26,000 Belgians were landed at Folkestone. Between September 20 and October 24, 35,000, all destitute, were met at the pier, fed and dispatched to London. Arrangements for feeding and housing were made by the Metropolitan Asylums Board. Some conception of the work done will appear from the fact that from September 10 to November 28, 45,532 refugees passed through the government hostels. The only refugees for whom neither the government nor the War Refugees Committee were responsible were 6,000 Russian and Polish Jews who came chiefly from Antwerp. Their care was undertaken entirely by their coreligionists. The anxiety of all classes in the United Kingdom was shown by the fact that offers of hospitality were received for over 100,000 refugees. The poor vied with the rich in showing practical sympathy. Trade unions subscribed to the wants of their fellow laborers. Families with barely room for themselves pinched and squeezed to give hospitality to the poor Belgians.

With regard to the problem of employment, the Belgian government intimated that it required for military service all unmarried men between the ages of 18 and 30, and asked that no employment should be given to any of that class. Two principles were adopted by the committee: No Belgian labor should be employed until every reasonable effort had been made to find British labor through the agency of the labor exchanges. No Belgian labor should be employed at rates of wages lower or on conditions less favorable than those generally observed in the district. A central register has been prepared of the refugees, classifying them according to sex, age and vocation.

PARIS LETTER

PARIS, Dec. 31, 1914.

The War

THE STATISTICS OF WOUNDS RECEIVED IN WAR

Statistics concerning the results of war-time wounds received at the war department up to the date of December 1 give the following results:

Wounded who have been able to return at once to the front, 54.5 per cent.

Wounded sent away for convalescence, 24.5 per cent.

Wounded under treatment in hospitals, 17.4 per cent.

Dismissed from the army, 1.46 per cent.

Dead, 3.48 per cent.

The figures are particularly interesting for they show that, thanks to the care which our wounded receive in the hospitals, more than half are able to return to the ranks of their commands. They show, moreover, that the mortality from wounds has been reduced to a figure unknown in previous wars.

PREVENTIVE INJECTIONS OF ANTITETANUS SERUM

December 14, Dr. P. Bazy emphasized before the Académie des sciences the necessity of using preventive injections of tetanus antitoxin on all those wounded in war without regard to the origin of the wound. Contrary to general opinion, bullet wounds are frequently infected with Nicolaier's bacillus. In nine out of 120 bullet-wounds not treated with tetanus antitoxin, Bazy has seen tetanus develop; all nine were fatal. Preventive injection ought to be made as early as possible—at the front and in the trains. It appears to give good results, however, even when practiced on the fifth day. Bazy believes that the dose of 10 c.c. adopted in veterinary medicine can be reduced in man, whose weight is so much less, to 1 or 2 c.c. This would help to prevent excessive consumption of the serum even if it is used in all cases.

ASSISTANCE FOR WOUNDED MOSLEMS

A group of orientalists, among whom are M. Paul Boyer, administrator of the Ecole des langues orientales, and some of the professors of the school, have just formed a society called the Société d' assistance morale aux blessés militaires musulmans for the purpose of visiting and in other ways taking an interest in the welfare of wounded Mohammedan soldiers.

PROHIBITION OF REMOVAL OF THE BODIES OF SOLDIERS KILLED BY THE ENEMY

The minister has received many requests for permission to remove the bodies of soldiers killed by the enemy. No such permission has been granted. Removal and transportation of bodies is explicitly forbidden for hygienic reasons, in the zone of military operations, and no favoritism has been shown. Instructions have been given that so far as possible all graves shall be marked.

MEASURES OF WAR HYGIENE

At the last meeting of the Paris section of the Association générale des hygiénistes et techniciens municipaux, the chemist Samuel Bruère, of the laboratory of toxicology, described an economical sand and charcoal filter for the decolorization of water sterilized by potassium permanganate. The filter is composed of a glass lamp-chimney over the bottom of which is tied a piece of fine cloth, and in which is placed successive layers of fine sand, pulverized charcoal and coarser sand. A medium-sized lamp chimney should hold about 10 gm. of charcoal, which is sufficient to decolorize 50 liters (quarts) of water treated with 10 mg. of permanganate per liter, a dose sufficient to destroy in ten minutes all the dangerous germs and toxins in the most contaminated water.

M. G. Risler, president of the section of hygiene of the Musée Social, spoke of the necessity of rebuilding our cities which have been destroyed by the enemy with all possible hygienic improvements, especially from the point of view of the possible extension of the city.

THE PUBLIC FOOD-SUPPLY

The military administration has taken measures to reduce the requisitions of living animals for the intrenched camp of Paris and to reserve the best of these animals which are fit for reproduction and for work for ultimate distribution in the provinces invaded by the enemy.

In view of the necessity of compensating for the ravages made among French flocks and herds, the Académie des sciences believes that in order to increase the animal food-supply, sufficiently to meet the needs of the year 1915 and those following it would be necessary to forbid, as much as possible, the slaughter of young animals and to make as economical arrangements as possible for producing canned, salted and frozen meats. The proposal was made to create, without waiting for the end of the war, large cold-storage warehouses, such as are used abroad, especially in Great Britain, for the preservation of frozen meats. The foundation of abattoirs with refrigerating plants was also recommended for the regions where animals are raised for food.

PROMOTION OF HOSPITAL INTERNS TO THE GRADE OF ASSISTANT SURGEON

To reach the grade of assistant surgeon, it is necessary to have the degree of M.D. Up to the present, therefore, hospital interns, not having received a doctor's degree, were restricted to the subsidiary functions of assistant physician, which corresponds to the grade of sergeant, without possibility of advance and under conditions which did not permit them to render all the medical and surgical service which might be expected from their professional experience. The government has decided that during the war, interns of the hospitals of Paris may be promoted to be assistant surgeons.

DR. MARIE WOUNDED

Among the physicians wounded is Dr. Auguste Marie, physician in chief of the asylums of Villejuif and director of the psychiatric laboratory at the Ecole des Hautes Etudes of Paris. He was struck by a bullet in the head while he was caring for a wounded man in a trench.

A VISIT FROM SWISS PHYSICIANS

A mission of Swiss physicians has come to France to visit our hospitals and sanitary formations. It is composed of Colonel Hauser, chief medical officer of the Swiss army, Colonel de Montmollien, physician of the second division and Majors Roehring and Hepli. The mission visited successively the hospitals of Lyons, Dijon and Paris.

PROPHYLAXIS OF INFECTIOUS DISEASES IN THE ARMY

The administration of the health service of the war department has just sent to physicians of the training camp instructions on the prophylaxis of the principal contagious diseases. It is recommended that young soldiers and new recruits be vaccinated against small-pox on their arrival at the camp. Ten days afterward, the antityphoid vaccination should be begun (four successive injections of 0.5 c.c., 1 c.c., 1.5 c.c. and 2 c.c. of Vincent's vaccine) which ought to be ended six weeks after arrival. The reservists are also examined on their arrival and made to undergo the double vaccination against small-pox and typhoid. The instruction then prescribes various measures of early isolation in cases of scarlet fever, diphtheria, mumps, measles and cerebrospinal meningitis; the disinfection of clothing, bedding, etc., as well as the cleaning of living quarters.

If typhoid should break out, an investigation should be made of the drinking-water of the barracks, which should be effectively purified if found contaminated. Chlorinated lime, 20 per cent. or copper sulphate 5 per cent. or still better, calcium chlorid 2 per cent. are to be used for the daily disinfection of water-closets, and, if necessary, their contents.

The physician of the camp should report the appearance of the first case of contagious disease immediately to the commander and to the director of the health service. He should, moreover, send the director of the health service, on the first, the eleventh and the twenty-first of each month, statistics of the number of cases since the beginning of the epidemic and the number of cases during the ten preceding days.

THE DAIRY HERD OF THE ENTRENCHED CAMP OF PARIS

The population of Paris suffered from lack of milk only at the beginning of the mobilization during the short period while our railways were encumbered otherwise. To prevent suffering, not only among infants but also among the wounded and patients in hospitals, our military authorities have placed in Paris, especially at the Bois de Boulogne and at the Bois de Vincennes a large number of dairy cows. The arrangement presented great difficulties at first; animals which had suffered from underfeeding and disease, inexperienced attendants chosen from among the refugees, etc. Notwithstanding a safe milk has been provided, thanks to the selection of healthy cows used under regular sanitary inspection. Examination by experienced veterinarians weeded out the cows that were not giving milk, those that were pregnant and those infected with various diseases, especially tuberculosis. All the cows (several thousand) were tuberculin-tested. About 15 per cent. reacted and were at once isolated. Those suspected of any local lesion were at once killed. Mammitis, contagious or not, was carefully hunted out. Frequent analyses are made at the laboratory of the service of veterinary inspection at the center markets. All milk found dangerous is denatured and thrown away, while milk which is merely inferior, that is, milk from the healthy udders of tuberculous cows or of cows with mammitis and milk from cows which have not been delivered is placed in containers of special form. It is boiled and used for feeding calves intended for use in future breeding. Milk of the best quality from the selected cows (which is, however, pasteurized as an additional precaution) is distributed free to the amount of 9,000 or 10,000 liters a day, to more than a hundred philanthropic institutions—hospitals, dispensaries, gouttes de lait, etc.

As M. Gabriel Petit, professor at the Ecole vétérinaire d'Alfort, has said, sanitary veterinary inspection has here given an object-lesson with regard to the services which it will render to public hygiene when the scientific control of milk is systematically organized at Paris.

Measures Against Alcoholism

In view of the important results obtained by the anti-alcohol campaign in Sweden and Norway and the recent energetic measures taken in Russia, the Academie des sciences has passed a resolution in favor of the immediate limitation of the number of licenses to sell alcoholic drinks, the definite prohibition of absinthe and similar liquors and the suppression of the privilege of converting wine into brandy.

The Bust of Pasteur at the Academy of Medicine

At the annual public session of the Académie de médecine, the family of Pasteur presented to the academy a portrait bust of the great scientist by Paul Dubois.

Death of Alfred Fournier

French medical science has just sustained a great loss through the death of the celebrated syphilographer, Dr. Jean Alfred Fournier, formerly clinical professor of clinical and syphilitic diseases at the Faculté de médecine de Paris.

Fournier was born in Paris in 1832. He began his medical studies under the direction of Ricord. He received his medical degree in 1860 and was appointed agrégé professor of the Faculté de médecine de Paris three years later. He occupied the medical chair of cutaneous and syphilitic diseases for many years and his remarkable lessons at the hôpital Saint Louis won for him celebrity in scientific circles all over the world. He had been a member of the Académie de médecine since 1880.

Among Fournier's most important works were his "Researches into the Contagion of Chancre" (1857), "Syphilis "Researches on the Incubation of Syphilis" (1865), "Syphilis and Marriage" (1880), of the Brain" (1879), "Syphilis and Marriage" (1880), "Syphilitic Heredity" (1891) and "Treatment of Syphilis" (1909).

Death of Dr. Jacquet

Dr. Lucien Jacquet, physician of the hospitals of Paris, has just died at Royan. He specialized in diseases of the skin, but, unlike many specialists, he took into consideration rather the whole organism with its disturbed functions than the cutaneous lesion by itself. Thus he did not share the general opinion as to the contagious character of alopecia. He regarded it as nervous origin, generally related to dental caries. Of late years, he insisted also on the relations between certain cutaneous affections, such as pimples of the face, and the habit of eating too quickly (tachyphagia). Jacquet was one of the first men in France to warn against the alcohol peril against which he worked by lectures and publications. He was the author, in collaboration with Besnier and Brocq, of a "Dermatologic Practice" and, in collaboration with Brocq, of an "Elementary Outline of Dermatology."

Personal

Dr. Massabuau, agrégé professor at the Faculté de médecine de Montpellier, has been appointed professor of pathologic anatomy at that school.

Dr. Vautrin, agrégé professor at the Faculté de médecine de Nancy, has been appointed professor of clinical surgery at that school.

The Société de chirurgie de Paris has elected the following officers for 1915: president, Dr. Rochard; vice-president, Dr. Picque, and secretary, Dr. J. L. Faure.

BERLIN LETTER

Berlin, Dec. 22, 1914.

The War

HEALTH OF SOLDIERS

The health of our army in general has remained good, although our troops have suffered somewhat from the typhoid epidemics which have prevailed among the civil population in France and Belgium. There has been as yet no great epidemic, and the total number of cases has remained far behind that of the Franco-Prussian War, which amounted to 75,000. The death rate varies much in different army corps, but unfortunately in exceptional cases reaches 20 per cent. Naturally, it is impossible so far to form even an approximate judgment as to the influence of the protective vaccination. The same is true of dysentery, which in the autumn reached a quite marked dissemination, but at present, according to reports received from several sources, appears to have almost completely declined. With reference to the etiology of dysentery, we have gained considerable information through this war; it seems that more organisms are involved than was formerly supposed. The Y bacillus has been found very frequently, especially in cases with a mild course which did not give the impression of dysentery. On the other hand, it has been found that the disease caused by Flexner's germ runs a severe course. Cholera is not present in our army. The cases introduced from Russia and Galicia have been completely isolated. Exanthematic typhus has occurred in a few cases among our troops in Poland.

DISEASES DUE TO CLIMATIC CONDITIONS

The diseases due to cold, especially pneumonia, are strikingly few, considering the long periods that the soldiers lie in the trenches exposed to wind and water.

THE SUBSTITUTES FOR BANDAGE MATERIAL

The authorities have recommended economy in the use of bandage material in view of the interruption of the importation of cotton. Several substitutes have been recommended, particularly lint (charpie), moss and materials made of cellulose.

EPIDEMICS SPREAD FROM RUSSIA

Some cases of cholera have been discovered among the Russians in two prison camps. A few days ago an epidemic of typhus fever broke out among several hundred Russians in the prisoners' camp near Cotbus in the province of Brandenburg. Unfortunately, two Germans also were attacked with this disease and an under-officer of the medical corps died of it. Apart from these two cases, cholera and typhus have been restricted hitherto to the Russians. The principles introduced into practice by Robert Koch have so far yielded brilliant results in the fight against epidemics in war. By immediate isolation of the patients and careful disinfection of all infected excreta, the most effective measures for the localization of the epidemic were carried out at once. In this relation the destruction of lice is of the greatest importance for typhus fever.

This "zoonosis" is very widely distributed in Russia. Our soldiers, and especially the officers, make very lively complaints about the evils which they have to suffer from the vermin in the Polish houses. Besides lice, fleas and bedbugs play a not insignificant rôle. The lack of cleanliness which prevails in Polish dwellings defies all description. For this reason, the soldiers prefer to stay in the artificially constructed rooms in caves or the wooden barracks or tents rather than be quartered in houses. For destruction of lice, articles published in the medical journals recommend certain remedies, the most thorough of which is naturally the burning of worthless clothing. But in addition there is disinfection with a jet of steam and treatment with sulphur fumes. Professor Blaschko recommends for protection against body lice, the anointment of the body with 5 per cent. naphthalin petrolatum or dusting with a naphthalin powder. As a protection against head lice, he recommends as best of all, to cut the hair very short.

TREATMENT OF GUNSHOT WOUNDS

New evidence is continually afforded of the benignity of gunshot wounds. Even wounds of the spinal cord appear not to afford as unfavorable a prognosis as had been assumed from experience in the war in the Balkans and the Russo-Japanese War. In some cases early operations have been quite successful. As a rule, to be sure, severe injuries of the spinal cord result fatally. The extent of injuries which a soldier with a good constitution can overcome is shown by a case in which the soldier was struck at the same time by eight bullets from a machine gun. One struck the head, one went obliquely through the upper jaw, another wounded the chin, one bullet went through the right arm and another wounded the left wrist. Only two were satisfied with wounding his helmet and his boot. It is reported that even this patient is on the road to recovery.

THE FOOD SUPPLY

The instruction of the people in questions regarding nutrition, is conducted with great zeal. Although several experts in scientific matters have stated that the attempt to starve us out has no prospect of success, yet on the other hand, it is self-evident that economy should be practiced in the use of the foodstuffs which we have on hand. In this matter housewives and cooks are the chief ones who must practice precautionary measures. For this reason, physicians, as well as the leaders of the woman movement who have been active in social and philanthropic work, are spreading information both in lectures and in circulars with regard to the nutritional value of the various foodstuffs. A circular published by Rubner and Zuntz, professors of political economy and physiology, has the following advice which, on account of its fundamental importance, may well interest those countries which are not involved in the war at present:

> "1. Treat all nutritious material respectfully and economically and use carefully every utilizable refuse.
>
> 2. Eat the army bread (that is, rye bread with the addition of 20 per cent. of potato starch) and demand it from your baker. It is nourishing and as palatable as plain rye or wheat bread. Potatoes are plenty but the bread cereals will suffice only if from 10 to 20 per cent. of potatoes are baked in the loaves or if less bread and more potatoes are eaten.
>
> 3. Reserve the wheat bread, such as rolls, for patients and invalids and restrict particularly the use of cake, butter cakes and other pastry to the lowest limits for we are short one-third of the previously necessary supply of wheat and wheat flour.
>
> 4. Be sparing in the use of meat, fat and butter. To be sure, we have now an abundant supply of cattle for slaughter because many farmers no longer have the fodder formerly imported, but that is no reason why one should consume more meat. If this happens, the supply will soon become very scanty. The use of meat, fat and butter should be restricted now so that our people will suffer no lack at a later time. Whoever can, should lay in a stock of preserved provisions, that is, smoked ham and bacon and dried sausages and lard for his home use, deliberately and without hurry.
>
> 5. The bulk of the food must be formed by our indigenous vegetable material, potatoes, rye, wheat, oats, buckwheat, vegetables, fresh and preserved fruit. Sugar can be used freely. Sugar, which is on hand in almost excessive quantities, is an excellent nutriment and a substitute for fat and butter. In addition, one should use milk and cheese, particularly skimmed milk and skimmed milk cheese, which are an excellent substitute for meat on account of their protein contents."

Nothing is said in this circular about alcohol but there is in Germany a tendency to temperance, as I have formerly mentioned, which previous to the outbreak of the war had led to very satisfactory results. The use of spirits for beverages, according to the official figures for 1912-1913, had fallen again in the German Empire. The corresponding figures for 1911-1912 were 1,933,532 hectoliters, or 2.9 liters per capita of the population, reckoned as 100 per cent. spirits. The consumption in the last fiscal year amounted to only 1,871,200 hectoliters, or 2.8 liters per capita. This was the figure also in 1909-1910. On the other hand, the employment of tax-free spirits for industrial purposes had increased: 1912-1913, 2.6, as compared with 1911-1912, 2.4 and 1910-1911, 2.2 liters per capita.

Marriages

Warren Barrett Allen, M.D., Oakland, Cal., to Miss Gertrude I. Mitchell of San Francisco, December 9.

Louise Anderson Merrimon, M.D., Asheville, N. C., and Mr. Nelson R. Perry, at Cincinnati, January 6.

Fred Everette Herzer, M.D., to Lavina Alice Baxter, M.D., both of Loma Linda, Cal., January 2.

Dudley Steele Conley, M.D., New York City, to Miss Sidney Ann Boales of St. Louis, January 2.

Joseph Ralph Wagner, M.D., to Harriett Beale Jennings, M.D., both of Palacios, Tex., January 2.

Wesley Lewis Boyden, M.D., Green Bay, Wis., to Miss Ora Lee of Oconto, Wis., January 1.

Ralph Leland Taylor, M.D., to Miss Nelle Warthen, both of Davisboro, Ga., December 23.

Samuel M. Howell, M.D., to Miss Annie Harvey, both of Cartersville, Ga., December 27.

Aristine Pixley Munn, M.D., and Charles Recht, both of New York City, January 2.

John D. Greenamyer, M.D., to Miss Grace Allen, both of Niles, Mich., January 1.

Deaths

Charles William Chancellor, M.D. Jefferson Medical College, 1853; during the Civil War medical director of General Pickett's Brigade in the Confederate service; after the close of the war professor of surgery and dean of the Medical School of Washington University, Baltimore; consul to Havre, France, during the Cleveland administration; school commissioner of Baltimore; for several terms alderman of the city, and in 1877 president of the common council; a member of the board of managers of the Maryland State Hospital for the Insane, and president of the Maryland State Lunacy Commission in 1880; secretary and executive officer of the Maryland State Board of Health in 1885; for the last fourteen years a resident of Washington, D. C.; died at his home in that city, January 3, aged 84.

Edward Maxwell Wiley, M.D. Indiana Medical College, Indianapolis, 1875; of Lexington, Ky.; a Fellow of the American Medical Association; president and censor of the Fayette County Medical Society; for four years superintendent of the Eastern Kentucky State Hospital, Lexington; a neurologist and psychiatrist of high rank; died in St. Joseph's Hospital, Lexington, January 11, after an operation for hypernephroma of the left kidney, aged 64. The regular monthly meeting of the Fayette County Medical Society was devoted to resolutions on Dr. Wiley's death and to eulogies of his worth as a man and a physician.

William Boddie Rogers, M.D. Bellevue Hospital Medical College, 1878; a member of the Tennessee State Medical Association; professor of surgery and dean of the faculty of Memphis Hospital Medical College since 1886; surgeon of the Bluff City Grays during the yellow fever epidemic of 1878-1879; president of the city board of health for three terms; a surgeon of renown and a teacher of great discretion, progressive and yet conservative; died in St. Joseph's Hospital, Memphis, January 13, a day after an operation for ulcer of the stomach, aged 58.

William Pitt Lawrence, M.D. University of Nashville, Tenn., 1878; a member and president in 1908 of the Florida State Medical Association; once president of the Hillsboro County Medical Society; surgeon of volunteers throughout the Spanish-American War, and later on duty during the Boxer uprising in China where he served as acting assistant surgeon U. S. Army for two years and a half; one of the most prominent and respected physicians of Tampa, Fla.; died suddenly at his home in that city, December 24, from heart disease, aged 57.

Walter C. Parker, M.D. Medical College of Ohio, Cincinnati, 1886; a member of the Kentucky State Medical Association and formerly president of the Kentucky Midland Medical Association; local surgeon of the Louisville and Nashville Railway at Versailles, Ky.; died at his home in that place, November 26, from pulmonary tuberculosis, aged 55.

Charles Ross Jackson, M.D. Yale University, New Haven, Conn., 1888; a Fellow of the American Medical Association; founder and first president of the West Side Clinical Society, New York City; consulting physician of the General Hospital, Saranac Lake; formerly adjunct professor of clinical diagnosis in the New York Polyclinic; resident physician at the Lake Placid Club; a prolific writer and a novelist of no mean ability; died at his home in Lake Placid, N. Y., January 4, from angina pectoris, aged 47.

Charles Barkley Warder, M.D. Jefferson Medical College, 1885; University of Pennsylvania, Philadelphia, 1888; a member of the board of managers and for many years medical director of the Stetson Hospital, Philadelphia, and a member of the board of directors of the Philadelphia Hospital Association; a specialist on diseases of the ear, nose and throat; died at his home in Philadelphia, January 5, from cerebral hemorrhage, aged 51.

George Huston Chapman, M.D. Jefferson Medical College, 1874; of Uniontown, Ky.; a member of the Kentucky State Medical Association and president of the Union County Medical Society; chief judge of surgical instruments at the World's Fair, Chicago, in 1893; died suddenly near Uniontown, December 20, from heart disease, aged 65.

Charles Curtiss Wadsworth, M.D. University of Wooster, Cleveland, 1874; a member of the Medical Society of the State of California; formerly president of the San Francisco Medical Society and for ten years secretary of the State Board of Medical Examiners; died at his home in San Francisco, January 1, aged 65.

John Milton Adey, M.D. Albany (N. Y.) Medical College, 1899; for fifteen years registrar of vital statistics of Cohoes, N. Y.; a member of the staff of the Cohoes Hospital and for a time an official of the Vital Statistics Bureau of the New York State Board of Health; died at his home in Cohoes, N. Y., December 26, aged 40.

Miner C. Hazen, M.D. University of Michigan, Ann Arbor, 1855; said to have been the oldest member of the Middlesex County (Conn.) Medical Association; county commissioner for six years and one of the original corporators of the Middlesex County Hospital; died at his home in Haddam, December 25, aged 85.

William D. Howe, M.D. University of Louisville, Ky., 1885; of Carlisle; while under treatment for malignant disease in the Good Samaritan Hospital, Lexington, died January 2 from an incised wound of the thigh severing the femoral artery, self-inflicted it is believed, with suicidal intent, aged 48.

Henry Roberts, M.D. Jefferson Medical College, 1845; a pioneer resident and practitioner of North Scranton, Pa.; postmaster of Providence, Pa., for several years and for nine terms a member of the select council of Scranton; died at the home of his daughter in Towanda, Pa., December 31, aged 93.

Thomas Hutchinson Ashton, M.D. University of Nashville, Tenn., 1865; formerly a member of the Nebraska State Medical Association; surgeon of volunteers during the Civil War; for more than quarter of a century a practitioner of Syracuse, Neb.; died at his home in Lincoln, Neb., December 29, aged 73.

Fred Hamilton Weir, M.D. University of Michigan, Ann Arbor, 1885; of Portland, Ore.; a specialist on diseases of the eye, ear, nose and throat; a member of the Oregon State Medical Association; formerly a resident of Laporte, Ind.; died at his home in Portland, about January 3, aged 50.

Sterling J. Gates, M.D. Tulane University, New Orleans, 1895; also a graduate in pharmacy; a Fellow of the American Medical Association and formerly a practitioner of Franklin, La.; but for the last two years a resident of Cliff, N. Mex.; died at his home in Cliff, about January 4, aged 44.

Calaway Garner Reagin, M.D. Miami Medical College, Cincinnati, 1877; a Confederate veteran; for many years a practitioner of Duquoin, Ill., and once president of the Perry County Medical Society; died at his home in Fort Meade, Fla., December 31, from pneumonia, aged 79.

Franklin A. Clement, M.D. Washington University, St. Louis, 1873; for thirty-five years local surgeon for the Burlington System at Greenfield, Ill., and twice mayor of the city; died at his home December 25, aged 64.

William P. White, M.D. University of Louisville, Ky., 1869; a Confederate veteran and health officer of Louisville, Ky., from 1891 to 1894; died at his home in that city, December 27, from pneumonia, aged 71.

Nathaniel Morton Ransom, M.D. Berkshire Medical College, Pittsfield, Mass., 1861; for more than fifty years a member of the Massachusetts Medical Society; also an adventist clergyman; died at his home in Somerville, Mass., January 8, from arteriosclerosis, aged 85.

Joseph Hunt Wilson, M.D. New York University, New York City, 1850; founder of the Somerville (N. J.) Library and once editor of the *Unionist Gazette;* an employee of the New York Custom House for many years; died at his home in Somerville, January 2, aged 85.

John Otto Grotthuss, M.D. Wisconsin College of Physicians and Surgeons, Milwaukee, 1900; of Stockholm, Wis.; coroner of Pepin County; died in St. John's Hospital, Red Wing, Minn., January 9, from embolism, after an operation for tumor of the bladder, aged 51.

Mahlon Henry Beary, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1880; surgeon of the One Hundred and Twenty-Eighth Pennsylvania Volunteer Infantry during the Civil War; died at his home in Allentown, Pa., September 18, from senile debility, aged 74.

Hercule Dansereau, M.D. Albany (N. Y.) Medical College, 1853; for more than fifty years a resident of Thibodaux, La.; a Confederate veteran; for several years a member of the board of aldermen of Thibodaux; died at his home in that place, January 2, aged 82.

Aaron S. Miller, M.D. New York University, New York City, 1862; a member of the Medical Society of the State of Pennsylvania; died at his home in Saegersville, Pa., December 31, from cerebral hemorrhage, aged 75.

Nelson McGarvin, M.D. Victoria College, Coburg, Ont., 1856; for many years a practitioner of Butte, Mont., but for the last three years a resident of Waterloo, Ont.; died at his home in that place, December 25, aged 84.

Robert S. Tidwell, M.D. University of Tennessee, Nashville, 1890; a Confederate veteran, and for many years resident physician of Tate Springs, Tenn.; died in that place, December 16, from epilepsy, aged 68.

John Miller Smith, M.D. Hahnemann Medical College, Chicago, 1869; one of the oldest practitioners of Lafayette, Ind., died at his country home near that city, December 26, from chronic bronchitis, aged 67.

Tilford T. Metcalf, M.D. Medical College of Ohio, Cincinnati, 1882; for twenty-five years county treasurer of Kenton County, Ky.; died at his home in Independence, December 25, aged 54.

James Winter Wamsley, M.D. Jefferson Medical College, 1893; also a graduate of the Philadelphia College of Pharmacy; died suddenly at his home in Philadelphia, December 21, aged 40.

William Payton Tucker, M.D. Ensworth Medical College, St. Louis, Mo., 1893; formerly of Kansas City, Mo.; died in a sanatorium in Colorado Springs, Colo., December 25, aged 45.

C. DeWitt Hudson, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1901; president of the Waco (Texas) Sanitarium; died in Kalamazoo, Mich., December 25.

James Dick Wallace, M.D. Rush Medical College, 1893; a member of the Iowa State Medical Society; died at his home in Plover, Ia., December 17, aged 51.

Charles W. Lawton, M.D. University of Southern California, Los Angeles, 1905; of Taft, Cal.; died in a hospital in Bakersfield, Cal., December 21, aged 34.

James B. Ewart, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1891; of Ione, Ark.; died in a hospital in Fort Smith, Ark., December 26, aged 71.

Charles M. Smith, M.D. Albany (N. Y.) Medical College, 1854; a physician and druggist of Albany, N. Y.; died at his home in Albany, September 27, aged 84.

Thomas Smith Middleton, M.D. Medico-Chirurgical College of Philadelphia, 1897; of Chicago; died in New Hope, Pa., December 26, aged 46.

A. E. Van Deventer, M.D. Northwestern University Medical School, Chicago, 1863; died at his home in Oswego, Ill., about December 22.

John H. Morton, M.D. University of Tennessee, Nashville, 1888; died at his home in Knoxville, Tenn., about December 26, aged 52.

Isaac F. Stafford (license, years of practice, Montana, 1889) died at his home in Pony, Mont., December 23, aged 85.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

HAYDEN'S VIBURNUM COMPOUND

Report of the Council on Pharmacy and Chemistry

The following report on Hayden's Viburnum Compound was prepared by a member of the Council's Committee on Therapeutics. The Council held the preparation in conflict with its rules and authorized publication of the referee's report.

W. A. PUCKNER, Secretary.

Hayden's Viburnum Compound, according to the advertising circulars, was first compounded in 1860 by W. R. Hayden. The medical profession is told that W. R. Hayden

> ". . . found by his experiments that a combination of the active principles of *Viburnum Opulus, Dioscorea Villosa,* combined with aromatics, proved a valuable remedy for *Spasmodic Dysmenorrhea.*"

As in 1860 W. R. Hayden was not a physician (he received a diploma from the Eclectic Medical College, New York, in 1867), and, so far as we can learn, he was not a pharmacist or chemist, one wonders what kind of "experiments" he made. Hayden's Viburnum Compound is put on the market by the New York Pharmaceutical Company of Bedford Springs, Mass. The name of this concern may sound imposing, until it is realized that it is merely a trade name adopted by Hayden in exploiting his nostrum.

The advertising matter formerly claimed that Scutellaria (skull-cap) was one of the ingredients of Hayden's Viburnum Compound. As this is no longer mentioned, it is fair to assume that even the manufacturer does not consider the composition to be of vital importance. Stress is laid on the superior efficacy of viburnum opulus in the conditions for which the preparation is recommended; it is emphasized that it is viburnum opulus, and not viburnum prunifolium, that is the important ingredient of Hayden's Viburnum Compound. The label, in accordance with the requirements of the Food and Drugs Act, declares that the preparation contains 50 per cent. alcohol. The claim is made:

> *"It is free from all narcotics and leaves no unpleasant after-effects."*

The medical profession is told that Hayden's Viburnum Compound is a remedy in:

> "Hysteria, Bilious Colic, Cramps of Cholera Morbus, Muscular Cramps, . . . Nervous Diseases of Pregnancy, Threatened Abortion, Post-Partum Pains, Puerperal Convulsions, Rigid Os, Dysmenorrhea, Menorrhagia."

DISCUSSION OF ALLEGED INGREDIENTS

Viburnum Opulus (*Cramp Bark*).—Botanists and pharmaceutical chemists declare that this drug has not been on the American market for many years, if ever, and that the drug used and even described as viburnum opulus is really the bark of another plant. Viburnum opulus and its preparations are therefore to be dropped from the next United States Pharmacopeia. The principal constituents of viburnum opulus are stated to be a glucosid, viburnin, a bitter resin, and a little tannin, with small amounts of earthy carbonates and phosphates and organic acids (Culbreth, Ed. 4, 1906, p. 591). The glucosid and resin being bitter, the drug might have a slight stomachic action (if, indeed, any such effect is actually produced by "bitters"); the small amount of tannin might make it slightly astringent; its fruit acids (citric and malic) might make it slightly diuretic. Even if viburnum opulus were present in Hayden's Viburnum Compound there is no clinical or laboratory proof that it, if given alone—without alcohol or other drug—has any antispasmodic or nervous sedative action.

Dioscorea Villosa (*Wild Yam*).—This drug contains a saponin and an acrid, irritant resin. It has never been proved clinically or experimentally that this drug has any action whatever except that its irritant resin might, if taken in sufficient quantity, cause irritation of the stomach and vomiting.

Aromatics.—The irritation produced by concentrated aromatics causes increased peristalsis and consequently may, if there is no obstruction, relieve intestinal stasis and intestinal colics. Therefore, a preparation containing large amounts of aromatics, especially if given in hot water, would have practically the same effects in the "cramps of a cholera morbus" or other forms of acute diarrhea as a home-brewed cup of spiced tea—and no more.

Alcohol.—This drug is a muscle relaxant, and sufficient doses might, by relieving spasm, relax a muscularly contracted os uteri and relieve post-partum pains. Alcohol dilates the blood-vessels both in the abdomen and on the surface of the body. It may thus either relieve uterine bleeding by lowering the blood-pressure and causing more blood to go to other parts, or increase uterine bleeding by relieving arterial and muscle spasm. Alcohol is also a habit-forming narcotic (Hayden's Viburnum Compound is advertised as "free from all narcotics"!) and when habitually used by either males or females tends to impair the capacity to produce normal offspring.

Even if the manufacturer's "formula" be accepted, Hayden's Viburnum Compound contains no therapeutically active ingredient except alcohol and aromatics. The recommended dose of this preparation is ". . . two teaspoonfuls in six of boiling hot water or milk and one teaspoonful of sugar, every fifteen or twenty minutes until relief is obtained."

> "Frequently after taking the Viburnum Compound the patient will sleep soundly for several hours from the sudden cessation of pain; in such cases she should never be awakened through any fear of oversleeping, as Hayden's Viburnum Compound does not contain any narcotic whatever, nor does it leave any disagreeable after-effects, and it may be given to a child when necessary without any special caution."

Read the foregoing and then remember that it means that one teaspoonful of alcohol (the equivalent of two teaspoonfuls of whisky) is to be given in hot water, every fifteen or twenty minutes until relief is obtained and the patient is asleep. Why not use plain language and say "until she is drunk"?

The thoughtful physician would consider it decidedly unwise to give alcohol to a young girl, to a prospective mother, or to a young mother, except under extraordinary circumstances. He would know that the menstrual pains for which this preparation is recommended are likely to be recurrent, and that the repeated taking of alcohol for recurrent pain is fraught with danger—the danger of initiating the alcohol habit. If, however, a physician does elect to give alcohol as a drug, he must let the conditions that govern each individual case determine whether it is not better to give it as whisky, or to disguise it in a prescription of his own. Above all the physician should be conscious that he is giving the drug, alcohol; and this is not the case when he prescribes a ready-made nostrum. If he writes a prescription containing whisky or other alcoholic he will take measures to avert the dangers inseparable from the use of this drug.

CONCLUSIONS

1. Even if the manufacturer's formula for Hayden's Viburnum Compound be accepted, it is apparent that any therapeutic activity the preparation may have is due essentially to the alcohol and aromatics.

2. Alcohol is a narcotic drug, and a habit-forming drug. Physicians ordering this preparation may, by so doing, be initiating the alcohol habit.

3. Whatever result is obtained by the use of Hayden's Viburnum Compound in the treatment of uterine or pelvic disturbances, is due to the alcohol it contains. The fact that menstrual pains are likely to recur might, when this preparation is relied on, become a factor in the formation of the alcohol habit.

4. Whatever result is obtained by the administration of Hayden's Viburnum Compound in the treatment of gastro-intestinal disturbances is due to the alcohol and the aromatics it contains.

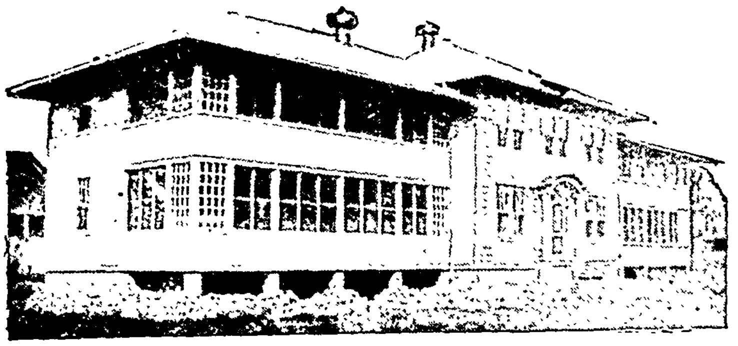
5. Whisky has the same alcoholic content (50 per cent.) as Hayden's Viburnum Compound; the dangers in the use of whisky are well known and its value as a therapeutic agent is being questioned more and more every year.

Holding the exploitation of this proprietary a danger to the public and a detriment to scientific medicine the referee recommends publication of this report as a protest against such irrational therapeutics. The profession should recognize that most, if not all, of the preparations recommended for painful menstruation and for all kinds of pelvic pain contain large percentages of alcohol, and that whatever physiologic effect is produced is, for all practical purposes, due to the alcohol.

Correspondence

Salvarsan and Neosalvarsan in Syphilis

To the Editor:—The article by Drs. Nelson and Haines of Fort Leavenworth, "Observations of the Results of Seven Months' Experience with Salvarsan in the Treatment of Syphilis" (The Journal, Dec. 26, 1914, p. 2277), is of great interest to physicians called on to decide between the use of salvarsan and neosalvarsan. Their conclusion that salvarsan is far more curative than neosalvarsan is, in my opinion, quite correct. My own experience has fixed the superiority of salvarsan at approximately 50 per cent., i. e., four doses of salvarsan given from seven to ten days apart give me curative results equal to six doses of neosalvarsan given at the same intervals, although the clinical results from the first doses of each are the same.



Detroit Tuberculosis Sanatorium.

It is to be regretted that some of the conclusions from their experience are rendered of less value owing to their having used the combined treatment. The quite opposite effects of mercury and salvarsan on the Wassermann positive render such observations rather unintelligible.

Any given number of cases of active secondary syphilis thoroughly treated with mercury alone, by injection or inunction, for six weeks will show a large percentage of negative Wassermanns, although the absence of reinfections after millions of such treatments indicates that mercury is not curative. Mercury is a peacemaker and not a destroyer, the treponemata become inactive, the antibodies disappear, and the serum reaction becomes negative. On the contrary, salvarsan is a destroyer of the treponemata and, responding to the released endotoxins, the antibodies increase and the negative serum test of a latent case of syphilis becomes positive and the positive Wassermann of an active case becomes more positive.

In spite of this fact, numerous reinfections show us that salvarsan when sufficiently used is curative. Observations of many such cases indicate that the serum reaction of a case cured by a sufficient salvarsan treatment without mercury will remain positive, a fading positive, for a month or two after the patient is cured. This fading positive would probably be absent in patients getting mercury also, and likewise, other patients getting the combined treatment would show a negative Wassermann while yet uncured. One drug increases and the other lessens the serum reaction, so what can we judge from such reactions when both drugs have been used?

A serum test which becomes negative during the third or fourth month after the treatment would indicate *not* a cure but the arrival of latency.

It is to be hoped that these careful observers having such controllable cases will supply another series, treated with salvarsan alone. Such observations would be of the greatest value and, as mercury alone has never proved curative, while salvarsan alone has cured many patients once, some twice and in at least one instance, to my knowledge, three times, they would be doing their patients no possible injustice.

The failure of these authors to notice any endotoxin reactions whatever seems impossible. I cannot conceive of seventeen patients with secondary syphilis receiving their first full dose of salvarsan or neosalvarsan (0.1 gm. of salvarsan to each 25 pounds of net weight, or 50 per cent. more of neosalvarsan) without an endotoxin reaction. I do not mean that such patients would become ill, but there would at least be a fractional rise above the temperature of the patient while on the table probably only 0.1 or 0.5 degree, and one or more bowel movements. Either or both of these symptoms constitute a positive endotoxin reaction, but temperatures should be noted hourly. In secondary cases given full doses of salvarsan every week or ten days until the endotoxin reaction cannot be noted by the most careful observation, the patients may, in my opinion, be regarded as cured; they will be found to have usually a fading positive Wassermann which becomes negative in from two to eight weeks.

E. H. Martin, M.D., Hot Springs, Ark.

[The foregoing letter was referred to Dr. Nelson, who replied:]

To the Editor:—We have at this hospital at this time fifty cases of syphilis undergoing treatment with mercury. When this is completed our results will be published. These results I do not feel at liberty to anticipate, but in view of the positive statement in the third paragraph of Dr. Martin's letter will say that in seven weeks of energetic treatment with mercury alone the serum reaction has not been changed in a single case of the fifty under observation. This agrees with work previously done. In reference to the last paragraph concerning reactions, desire to say that while Dr. Martin may not be able to believe in the absence of reactions in the cases mentioned, yet nevertheless it is a fact.

Kent Nelson,
Major, Medical Corps, U. S. Army,
Fort Leavenworth, Kan.

Provision for Tuberculous Infants

To the Editor:—Dr. Alfred F. Hess was certainly correct in his article of recent date on "The Neglect to Provide for the Infant in the Antituberculosis Program." Interest in the child as an important factor in this problem has greatly increased however; and Dr. Sach's letter in your issue of January 2 shows that this includes the infant.

I beg to enclose a photograph of the Anna T. Dodge Pavilion for Children at the Detroit Tuberculosis Sanatorium. One quarter of the space in this building is devoted to the care of infants. It was opened on November 29, 1914, and the age of the youngest patient there at present is nine months.

The building was built especially for children and has many devices for their safety, care and comfort. We have already been obliged to use an isolation room for a child found to be a diphtheria carrier. The building includes a large school-and-play room which has its own screened-in porch. If any of your readers are planning such a building we shall be glad to answer questions about this one.

Herbert M. Rich, M.D., Detroit.

Suspension of Medical Courses in Vienna

To the Editor:—Knowing that many physicians are desirous of hearing the exact conditions in regard to courses and medical work in Vienna, I am taking the liberty of writing you.

Since the war began, no medical courses have been given in Vienna, and none will be until the war is over. The club rooms of the American Medical Association of Vienna will remain open, and information may be obtained by writing our secretary.

All of the clinics in Vienna are running the same as before the war, with a much reduced force of assistants and patients. In regard to medical work in Vienna at the present time, I would not advise any one to come until after the war is over, although for a limited number of men, work could be secured in certain hospitals or clinics.

It is my opinion that as soon as the war is over, the courses and work will begin at once, the same as before.

Frank C. Davis,
President, American Medical Association of Vienna,
Vienna VIII, Schlösselgasse 28.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HEMOPTYSIS

To the Editor:—From the study of two cases of hemoptysis I am inclined to the belief that hemorrhage from the lungs may occur without any distinct pathology, being brought on by severe constipation. The first patient I had under observation for over two years and the present patient for thirteen months. In neither have I been able to detect any signs of pulmonary consolidation, the health (except for the hemorrhages) has been excellent, both more than maintaining their weight, both negative to intradermal injections of Koch's tuberculin. The hemorrhages occur at various intervals ranging from six weeks to three months, and are always preceded by a period of severe constipation, and cease as soon as the bowels are well cleaned out.

Neither patient has any cardiac disturbance, and having seen both during an attack, I am sure the bleeding is from the lungs and not from the stomach.

I would like to know if others have had similar cases or if any other suggestion as to the cause of the hemorrhages can be given.

S. Salzman, M.D., Toledo, Ohio.

Answer.—References are found in the literature to a number of peculiar cases of hemoptysis, but the titles do not enable us to say whether constipation was a prominent symptom in them. It is easy to understand how intestinal changes might raise the blood-pressure in the venous system so as to provoke hemorrhage in persons specially predisposed. However, it is well to keep in mind other possible causes.

Recurrent hemoptysis in subjects of chronic arthritis has been observed.

Troublesome bleeding from the lungs may occur in diseases accompanied by hemorrhages elsewhere or by hemorrhagic tendencies, as scurvy, leukemia or purpura.

The following additional causes are to be considered: Aneurysm, arteriosclerosis and distomiasis. Distomiasis is a rare condition in this country, but apparently more prevalent than formerly, because of infection by *Paragonimus westermanii.* The symptoms have been summarized by Stiles and Hassell (*Public Health Reports,* 1900, xv).

STATES RECIPROCATING WITH NEW YORK

To the Editor:—I hold a New York state license, 1911. Kindly inform me with what states I may reciprocate. J. H.

Answer.—New York has established reciprocal relations with Delaware, Indiana, Michigan, New Jersey, Ohio, Utah, Virginia and Wisconsin.

Preventogram.—The common drinking cup, the common towel or the common pencil, are common causes of diseases and not uncommonly hasten the common end of mankind.—Pittsburgh *City's Health.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Kansas: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lebanon.

New York: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

New Entrance Requirements for Harvard Medical School

On recommendation of the faculty of medicine, the Harvard Corporation has recently changed the requirements for admission to the Medical School which are now as follows:

Graduates in arts or science of approved colleges or scientific schools who can furnish evidence (a) that they have such knowledge of physics, biology, general chemistry, and organic chemistry, as may be obtained from one year's course in each of these subjects as given in approved colleges and scientific schools (in organic chemistry, half courses of good grade may be accepted); (b) that they have a reading knowledge of French or German.

Students who have completed two years' work in a college or scientific school of high rank, provided they present certificates (a) that they have stood in the upper third of their class, (b) that one year's course has been taken in physics, general chemistry, and organic chemistry, and (c) that they have a reading knowledge of German or French.

This new statement of the entrance requirements differs but slightly from those published in last year's catalogue. The change has not lowered the entrance requirements but has decidedly improved them, since hereafter, every student admitted, whether he holds a collegiate degree or has completed the two years of collegiate work, must have completed courses in the specified sciences and have a reading knowledge of French or German. Formerly degree men were admitted without these specified courses.

Another measure was adopted giving the administrative board the right to refuse applicants if the number seeking admission is too large to be effectively taught. In this connection, it is interesting to note that already three medical schools have limited the number of students to be enrolled: Johns Hopkins admits on the average 90 students in each class; Rush Medical College admits only 100 students each in the classes of the first and second years and 120 students each in the classes of the third and fourth years, and Leland Stanford, Jr., University School of Medicine has limited its enrollment to 25 students in each class. There are other medical colleges with more limited equipment and clinical material which apparently have not appreciated the fact that much better work might be done with smaller classes.

Oregon July Report

Dr. L. H. Hamilton, secretary of the Oregon State Board of Medical Examiners, reports the practical and written examination held at Portland, July 7-9, 1914. The total number of subjects examined in was 15; total number of questions asked, 108; percentage required to pass, 75. The total number of candidates examined was 73, of whom 44 passed, including 9 osteopaths, and 29 failed, including 11 osteopaths and 6 non-graduates. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
College of Physicians and Surgeons, Los Angeles	(1914)	1
Hahnemann Medical College of the Pacific	(1914)	1
Bennett College of Eclectic Medicine and Surgery	(1907)	1
Chicago College of Medicine and Surgery	(1908)	1
Chicago Homeopathic Medical College	(1904)	1
Rush Medical College	(1913)	1
University of Illinois	(1914)	1
Tulane University of Louisiana	(1908)	1
Johns Hopkins University	(1914)	2
Boston University	(1912)	1
University of Michigan, Dept. of Med. and Surg.	(1910)	1
University Medical College, Kansas City	(1913)	1
College of Phys. and Surgs., in the City of N. Y.	(1896)	1
Columbia University	(1912) (1914)	2

University and Bellevue Hospital Medical College	(1904)	1
University of Oregon	(1910,1) (1913,1) (1914,8)	10
Willamette University	(1912,2) (1913,1)	3
Jefferson Medical College	(1911)	1
Medico-Chirurgical College of Philadelphia	(1913)	1
Woman's Medical College of Pennsylvania	(1888) (1901)	2
McGill University	(1896)	1
FAILED		
California Eclectic Medical College	(1914)	1
College of Phys. and Surgs., San Francisco	(1910) (1914)	2
Pacific Medical College*	(1914)	1
Rush Medical College	(1903)	1
Kentucky School of Medicine	(1907)	2
Louisville and Hospital Medical College	(1908)	1
St. Louis University	(1906). (1908)	2
University of Oregon	(1914)	1
Willamette University	(1905)	1
Non-graduates		6

* This is a new institution located at Los Angeles which grants as much as three years of advanced standing for work done in osteopathic colleges, and is, therefore, classified among such schools.

Arizona October Report

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, Oct. 6-7, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 10, of whom 6 passed, including 3 osteopaths, and 4 failed, including 1 osteopath. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Physicians and Surgeons, Los Angeles	(1914)	84.4
Chicago College of Medicine and Surgery	(1914)	82.5
Cleveland College of Physicians and Surgeons	(1898)	90.9
FAILED		
Rush Medical College	(1883)	62.3
Sioux City College of Medicine	(1896)	56.2
Pulte Medical College	(1878)	61

Arkansas Eclectic November Report

Dr. C. E. Laws, secretary of the Arkansas Eclectic Medical Board, reports the oral and written examination held at Little Rock, Nov. 10-11, 1914. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 5, of whom 4 passed and 1 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgia College of Eclectic Medicine and Surgery	(1910)	83.7
American Medical College	(1909)	81.1
Eclectic Medical University, Kansas City	(1914)	89.1
Eclectic Medical College, Cincinnati	(1912)	90
FAILED		
Bennett Medical College	(1910)	67.2

Delaware December Report

Dr. H. W. Briggs, secretary of the Medical Council of Delaware, reports the written examination held at Dover and Wilmington, Dec. 8-10, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 8, all of whom passed. One candidate was licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgetown University	(1913)	79.6
Howard University	(1913)	87.8
Harvard University	(1914)	85.1
Cornell University	(1913)	78.2
New York Homeo. Med. Coll. and Flower Hospital	(1912) 90.2, (1913) 91.6.	
Hahnemann Medical College and Hosp., Philadelphia	(1914)	88.4
Medico-Chirurgical College of Philadelphia	(1914)	84.4

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
George Washington University	(1907)	Dist. Colum.

Book Notices

The Occupational Diseases; Their Causation, Symptoms, Treatment and Prevention. By W. Gilman Thompson, M.D., Professor of Medicine, Cornell University Medical College in New York City. Cloth. Price, $6 net. Pp. 724, with 118 illustrations. New York: D. Appleton & Co., 1914.

This book, the first to appear in this country on occupational diseases, is a much needed contribution. The author goes at length into the various phases of the problems and gives a thoroughgoing description of the hazards in the various trades. In the first parts there is a general discussion of the history, etiology and pathology of the commoner trade ailments, and general measures for preventing and treating them. The poisonous substances are then taken up in the order of toxic metals and their compounds, toxic gases, vapors and fumes, toxic fluids and irritant dusts, and in dealing with these the writer has some very practical suggestions as to how intoxication may be lessened. Under the heading "Germs" he includes uncinariasis, with anthrax, foot-and-mouth disease, glanders and septicemia. After dealing with the troubles to which they lay workmen liable, he goes on to the diseases due to the environment in which men work, air pressure, temperature variations, evil effects of light rays and Roentgen rays, and electric shock. There is also a discussion of the occupational diseases as they affect various organs—the blood, nerves, eyes, skin, etc.; something on the influence of alcohol, syphilis and tobacco, and then a grouping of diseases by industries other than those already dealt with. In the appendixes the main hazards and their causes are given in tabular form, and the main provisions of existing laws governing such hazards in the states. Altogether there is the material for an excellent work; but there are so many indications of carelessness in thought and diction that the book falls far short of the front rank.

Pasteur and After Pasteur. By Stephen Paget, F.R.C.S. Cloth. Price 3 shillings 6 pence. Pp. 152, with 8 illustrations. London: Adam and Charles Black, 1914.

This is one of the series of medical history manuals. The selection of Mr. Stephen Paget as the author was most fortunate. His long service as secretary of the Research Defense Society of England, his thorough familiarity with the scientific foundation of medicine, and his extensive writings on scientific subjects, both technical and popular, qualify him admirably for the task of preparing a popular book on Pasteur, his work and its results. The basis of the biographic portion is Radot's well-known "Life of Pasteur." In addition to a sketch of the man and his work, the development of bacteriology and preventive medicine after Pasteur's time is discussed, including the work of Lister, Koch, Roux, Haffkine, Kitasato, Yersin and others. The book is an excellent little manual on the development of modern preventive medicine. It can be read with profit by every physician, and can be recommended without hesitation to laymen desiring information on this subject.

Anoci-Association. By George W. Crile, M.D., Professor of Surgery, School of Medicine, Western Reserve University, and William E. Lower, M.D., Associate Professor of Genito-Urinary Surgery, School of Medicine, Western Reserve University. Edited by Amy F. Rowland. Cloth. Price, $3 net. Pp. 259, with 60 illustrations. Philadelphia: W. B. Saunders Company, 1914.

As a result of the several articles which have appeared during the past few years from the pen of one of the authors of this book, the term "anoci-association" has come to have a definite meaning in surgical practice, a meaning, however, which, judging from some of the criticisms of it, is frequently misunderstood. The idea seems to be prevalent that anoci-association refers to a particular method, or a certain technic in doing a particular thing against which the criticism is directed. As a matter of fact, anoci-association consists in the principles of, or if one may use such a comprehensive term, the philosophy of harmful stimuli; their nature; their effects on the living organism; the manner in which the organism reacts to them; methods of preventing harmful effects, etc. Whether or not one agrees with all of the author's methods is immaterial so long as one recognizes the basic principles; nor need one agree with the author in all of his interpretations, yet it seems scarcely possible for one to follow all of his arguments without being convinced of the underlying truths of anoci-association. It is more than likely that others may, in fact do, differ in points of technic yet accomplish the same result; but, as already stated, it is not a question of points of technic but of principles, and there can be no doubt that the charming enthusiasm of the author in recognizing and promulgating these principles has accomplished and will yet accomplish much good in the manner in which operations are conducted.

Practical Pediatrics. A Modern Clinical Guide in the Diseases of Infants and Children for the Family Physician. By James H. McKee, M.D., Professor of Pediatrics in the Medical Department of Temple University, and William H. Wells, M.D., Assistant Professor of Obstetrics, Jefferson Medical College, Philadelphia. An Appendix on Development and Its Anomalies by John Madison Taylor, A.M., M.D., Associate Professor of Non-Pharmaceutic Therapeutics, Medical Department, Temple University, Philadelphia. Two Volumes. Cloth. Price, $12 net. Pp. 1182, with 386 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

This work, taken as a whole, makes at first a rather favorable impression, and on closer analysis falls short of what one can expect of a treatise on this subject to-day. Text-books are not expected to include the very latest current literature, but only that which has been generally accepted and corroborated. The relationship of the thymus to the development of the intellectual faculties is hardly the last word in the physiology of that organ. The same is true of the probable relationship of the pancreas to carbohydrate metabolism. Many of the articles seem diffuse and do not give a clear conception of the diseased conditions. This is especially true of the one on cystitis. Stone is certainly not the commonest cause of vesical inflammation. The chapter on disorders of metabolism dependent on the organic constituents of the food consists of exactly one page; as far as the infant is concerned, four paragraphs. The important contributions of Czerny and Keller, Finkelstein and others are taken care of in one sentence, and the impression is given that there is no such thing as a disturbance due to wrong feeding. Albumin milk is not given in the index, nor could it be located anywhere in the text. To sum up, the work, in certain essentials, falls far short of the standard set by numerous works in the English language.

Allgemeine Chirurgie. Von Dr. Med. Ph. Bockenheimer, Universitätsprofessor für Chirurgie an der Universität in Berlin. I. Teil: Chirurgische Operationslehre. II. Teil: Chirurgische Erkrankungen mit Ausnahme der Geschwülste und Zysten. III. Teil: Geschwülste und Zysten. Paper. Price, 30 marks. Pp. 855, with 1,034 illustrations. Leipzig: Werner Klinkhardt, 1914.

The work is divided into three parts: Part 1 on surgical operations, Part 2 on surgical diseases, exclusive of tumors and cysts, and Part 3 on tumors and cysts. Part 1 is general in character, and treats of operative technic rather than of particular operations. It also contains chapters on wound healing, transplantation of tissue, bandaging, etc. The text is short and to the point, and most of the illustrations are quite satisfactory. Some, however, are out of date: we do not expect, to-day, to see operations on the skull shown with the hair on the scalp and the surgeon's hands bare with neat cuffs on the wrists; and in operations about the axilla, the parts are supposed to be shaved, and not left covered with hair. Part 2 deals with general subjects, such as the various forms of infections, both acute and chronic, injuries, fractures, diseases of the bone, joints, etc. Of this part, those chapters on the diseases of the bones are the most interesting; there are 440 pages, with 498 illustrations, and forty colored plates, from which it necessarily follows that the text must be quite brief; in fact, too brief in places to be entirely satisfactory. Part 3, of 160 pages on tumors, contains nothing especially new. The illustrations, however, are very good, and show many interesting examples of the various growths. The colored plates are particularly fine, showing both macroscopic and microscopic structure.

Miscellany

ALBERT VAN GEHUCHTEN—AN APPRECIATION

A man as charming as he was intellectual, and as beloved as he was famous, was Albert van Gehuchten, professor of the anatomy, pathology and treatment of diseases of the nervous system in the University of Louvain. His sudden death (Dec. 9, 1914) has deprived the world of one of the most skilful investigators and brilliant exponents of biologic science.

In deploring the losses of the rich past in the destruction of the library of Louvain, not many realized at first the even more significant losses to the future. Professor van Gehuchten's city as well as his country home was burned, and with them all the manuscripts containing the records of his research work during the last ten years—research work along the lines of that, which already published, had made such advances in the science of neurology.

Professor van Gehuchten was enthusiastically received in Cambridge, and a position which happened to be vacant was given to him, and through the efforts of Sir William Osler and others, a contribution from the Rockefeller fund was placed at his disposal. He was given the use of the laboratory of the Research Hospital, which was installed in a small separate building, the hospital being occupied by wounded soldiers. There, with a brave and hopeful spirit, he set himself to the task of reproducing the work that was destroyed; and he quickly attracted to him an enthusiastic circle of men who were quickened by his interest and brilliant methods of work.

In spite of his determination, it was a painful struggle against despair which he with so many of his fellow countrymen were obliged to undergo, and he was just rallying to the acceptance of the new condition, and apparently regaining his health and poise, when a sudden attack of pain called his friends into consultation, and a laparotomy was performed, which successfully released a volvulus. To all appearance he was making a good recovery, and was able to carry on his correspondence and see a few friends, when a sharp pain in the region of his heart heralded the end.

Professor van Gehuchten died December 9, in his fifty-fourth year, in Cambridge, the university of refuge to so many distinguished professors of Louvain.

The whole medical world grieves the loss of this most skilful investigator and brilliant exponent of biology.

Dec. 1, 1912, the University of Louvain celebrated Professor van Gehuchten's jubilee of twenty-five years' teaching at that historic seat of learning.

Dr. Mecus, in his presidential address, said, "The work of M. le Professeur van Gehuchten is so stupendous, that when I was asked to preside on the occasion of his jubilee I was afraid that I should not in any sense be able to do justice to it."

He then traced a series of discoveries and methods, which from his first publication on structural muscle cells, through his study of the nervous system, showed him to be one of the greatest masters in the science of neurology. "Our present-day conception of the neuron was placed by him on an unassailable foundation, namely, that the neuron comprises a cellular body, protoplasmic prolongations for cellulipetal transmission, and an axis cylinder prolongation for cellulifugal transmission, both kinds of prolongation having a free termination, the nerve conduction from one neuron to the other being effected by the contiguity of the end ramifications of the axis cylinder of one neuron to the protoplasmic prolongations of the neighboring neuron."

He established methods of methylene blue staining, which he found of greater value in the examination of the more intimate nerve structures in their modification, than the coarser methods of Golgi. His investigations of the phenomena of chromatolysis formed the basis on which he rested his study of the true origin of motor nerves, and later by the discovery of a new method, based on the phenomenon of direct wallerian degeneration, he gave an exactitude to the result of his studies of the intracerebral spinal courses and of the motor nerves and certain central nerve tracts never hitherto attained. He showed that if, instead of dissecting a nerve, it was torn out, degeneration followed not only of the peripheral but also of the central portion of the nerve, such central degeneration being not retrogressive, but descending, like that of the peripheral portion, this being due not to the direct separation of the nerve itself, but to the atrophy of the cells from which it originated and was fatally injured by this violent traumatism.

Dr. F. E. Batten, writing in the *British Medical Journal* an appreciation of this remarkable man's work, says:

"Professor van Gehuchten was a teacher of great capacity, esteemed by his students as much for the high conception he had of his professional duties as for the pains he took to communicate his instruction in an interesting and sympathetic manner, illustrating his points step by step by drawings on the blackboard, demonstrations on the human body, and even by cinematograph films. In his work, van Gehuchten was not only a clinician of great eminence, determining with mathematical exactitude the seat of lesions of the central nervous system, but a bold innovator in the domain of the therapeutics, and especially the surgery of the nervous system. He obtained unlooked-for results in the surgical treatment of cerebral and medullary tumors; in obstinate neuralgia of the trigeminal nerve he proposed excision of the nerve branches to bring about atrophy of the cells from which they originate, and hence destruction of the nerve itself and elimination of all pain; he modified Foerster's operation, and successfully proposed the less complicated method of resection of the internal posterior root filaments instead of the posterior roots.

These clinical and therapeutic triumphs proved to those who were still in doubt, that absolutely pure and disinterested scientific research must finally lead to the elucidation of the most obscure pathologic problems, and thus form the indispensable foundation of medical science."

Regulation of the Practice of Chiropody

Attempts have been numerous in recent years on the part of many of the minor branches of medicine to obtain legislation permitting their followers to assume the title of "doctor," and to provide for educational standards much lower than apply to practitioners of medicine. In contrast the resolutions adopted at a recent meeting of the Chiropody Society of Pennsylvania are encouraging. It is apparent that the followers of this minor branch of medicine are not asking for the privilege of assuming an unearned title of "doctor," but, on the contrary, believe that the regulation of the practice of that branch should be placed in the hands of those who have to do with the licensing of physicians. The resolutions stated in substance that no branch of medicine or surgery is so unimportant as not to merit the care and control of the medical boards in the various states; that the care of the human foot in a scientific manner should be a part of the teaching and practice of medical colleges; that until such time as the medical colleges establish a department of chiropody and furnish an education sufficient for the practicing of chiropody, that schools of chiropody maintaining a proper academic and professional standard should be recognized by the boards of licensure of the various states, and that the practice of chiropody should be regulated by law in the various states.

The Eyes and Vision of Fishes

W. H. Bates, in the *Bulletin of the New York Zoological Society* for November, reports an experimental study undertaken to find out the cause of near-sight, the subjects of the experiments being fishes.

Fishes' eyes compared with human eyes are relatively large, the length of the eye of a fish being ordinarily about one-twentieth of its length, while the length of the eyeball of a man is from a sixtieth to a seventieth of his height. The eyes of fishes are in constant use except when they are asleep. Most fishes have no eyelids, their eyes being protected from injury by a shiny material, or by a thick transparent skin. The puffer, or swellfish, which habitually burrows in sand at the bottom of the water, has eyelids which cover the eyeballs when closed, the lower eyelid being larger than the upper. The iris is usually yellow in fish, but sometimes of other colors. The pupil, while usually round, as in man, was found in some fishes to be pear-shaped, triangular or oval. The size of the pupil apparently does not change much on exposure to bright light, or as rapidly as does the pupil of most air-breathing animals.

In the experimental work the eyes of normal fishes were first examined with the retinoscope; then by electrical stimulation the focus was changed from distant to near objects. The superior oblique muscle was next cut, after which electrical stimulation produced no change in focus or accommodation.

After the muscle had been sutured, the focus again responded to electrical stimulation. Electrical stimulation after removal of the lens produced as much accommodation as before. It was found that, contrary to statements sometimes made, the eyes of fishes when swimming were focused for distant vision. Fishes are able to focus their eyes on near objects (as close as 4 inches) by the action of the superior and inferior oblique muscles; they have no ciliary muscles. It was found possible by operation on the oblique muscles to make the fish near-sighted, far-sighted or astigmatic.

Medicolegal

Delay in Delivery of Dog's Head to Pasteur Institute

(Miller vs. Southern Express Co. (S. C.), 83 S. E. R. 449)

The Supreme Court of South Carolina affirms judgments against the express company for damages for delay in the delivery of a dog's head directed to the Pasteur Institute, Columbia, S. C. The court says that the dog, having bitten the plaintiff's children, was put into a box and kept there for several days until it died. The dog had acted peculiarly, and, when it died, the plaintiff, suspecting hydrophobia, had its head cut off, put into a box and sent to the institute. That was on Monday morning. The box was labeled "mad-dog head," and the express agent informed that it was being sent to Columbia for examination, to see whether the dog was really mad or not.

The evidence tended to show that the box arrived in Columbia on Monday evening and was carried to the institute, but that was closed. It was carried back early Tuesday morning, but the institute had not opened. Later it was carried back and delivered to a carpenter working in the building, but not for the institute. The box was put in the hallway and the officials of the institute did not get it until Wednesday. By that time the head was so badly decomposed that an examination was not made for the reason that in the judgment of the officials it was too late to discover the presence of hydrophobia. The plaintiff claimed on the trial that, as a result of the delay in delivery, he was put to expense and was forced to give, and his children to take, the Pasteur treatment for hydrophobia. The trial resulted in verdicts and judgments for the father and his children in varying amounts not stated in the court's opinion overruling the defendant's exception and affirming such judgments.

Liability for Loss of Life in Burning of Sanatorium

(Green vs. Biggs (N. C.), 83 S. E. R. 553)

The Supreme Court of North Carolina affirms a judgment for damages for the death of a patient in the defendant's sanatorium, which was burned. The court says the principle seems to be generally recognized that a private charitable institution, which has exercised due care in the selection of its employees, cannot be held liable for injuries resulting from their negligence, and the rule is not affected by the fact that some patients or beneficiaries of the institution contribute toward the expense of their care, where the amounts so received are not devoted to private gain, but more effectually to carry out the purposes of the charity. The rule is otherwise where fees are charged with the expectation and hope of securing gain and profit, and the proprietors of institutions of this class are held to the duty of ordinary care in the treatment and protection of those intrusted to them, and are responsible for injuries resulting from failure to perform this duty. The defendant was the proprietor of a private institution, maintained for gain and profit, and the sufficiency of the complaint depended, therefore, on whether it alleged actionable negligence. The complaint alleged that the patient in question was received into the institution of the defendant for hire; that he was old and helpless; that he was placed in an upper room of a wooden building; that the windows of his room were closed, and he could not open them; that the only exit from his room was on the hall; that there was no attendant near him; that the defendant maintained a fire in a furnace under the house night and day; that he had a watchman employed whose duty it was to watch the fires and protect the premises; that the defendant permitted the watchman to leave the premises and put no one in his place; that the fire which caused the death started at or near the furnace, and there was no one present to extinguish it or give the alarm. With these facts admitted, as they were by a demurrer, the jury would have been warranted, on an issue submitted to them, in finding that the defendant did not exercise the care of a person of ordinary prudence, and that this was the cause of death. In passing on the complaint, the court must construe it liberally, and, when so considered and construed, it is of opinion that the complaint stated a cause of action.

Second Injury from Exercising

(Kelley vs. Lembeck & Betz Eagle Brewing Co. (N. J.), 92 Atl. R. 282)

The Supreme Court of New Jersey affirms a judgment for $3,750 in the plaintiff's favor for damages alleged to have been sustained by reason of a fracture of the patella caused by a defective cellar door owned by the defendant. The court says that the accident occurred January 28, and that the plaintiff was taken to a hospital where he remained until February 20, when he went home and put himself under the care of his own physician, who, according to the plaintiff's evidence, advised him after a time to do a little walking indoors. In May, while he was exercising under the instructions of his physician, he sustained a new fracture of the patella, presumably in the same place. Under the charge of the trial court he was allowed to recover for damages resulting from both fractures, if the jury should find that the proximate cause of both was the original negligence of the defendant. The defendant contended that the plaintiff was guilty of contributory negligence in undertaking to use the fractured bone before it had entirely healed, and requested a charge that the jury must not take into account any damages which were the proximate result of the second injury. This request was properly denied, because it required the court to take from the jury the questions whether the second injury was the proximate result of the original fall, and whether the plaintiff was guilty of contributory negligence in the respect just stated. This point, however, was for the jury in both aspects. There was evidence in the case that the plaintiff ought not to have left the hospital so soon, and should not have exercised, as he did. But the plaintiff swore that the hospital surgeon said that he could go, and that he waited another day before leaving. The plaintiff testified, also, that his own physician advised him to walk a little indoors. There was some testimony that the plaintiff was advised to consult a specialist, and did not do so; but it still remained a jury question whether he had used reasonable care in the selection of a physician and in following his instructions. If so, the defendant could not escape liability for a situation which, but for the original injury, never would have arisen.

Society Proceedings

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Twenty-Seventh Annual Meeting, held at Asheville, N. C., Dec. 15-17, 1914

The President, DR. JOHN WESLEY LONG, Greensboro, N. C., in the Chair

Officers Elected

President, Dr. Bacon Saunders, Fort Worth, Tex.; vice-presidents, Drs. Thomas S. Cullen, Baltimore, and S. M. D. Clark, New Orleans; secretary, Dr. W. D. Haggard, Nashville. The next annual meeting will be held at Cincinnati.

Simplicity of Transfusion by Means of Kimpton-Brown Tube

DR. J. M. MASON, Birmingham, Ala.: On account of the simplicity of the technic, the certainty of results, and the safety with which the Kimpton-Brown method may be used in the hospital or the home of the patient, it is the most useful method of transfusion devised.

New Method of Lateral Anastomosis of Blood Vessels; Operation for Cure of Arteriovenous Aneurysms

DR. J. SHELTON HORSLEY, Richmond, Va.: I doubt the practical utility of reversal of the circulation. My experiments show that in reversal of the circulation by the end-to-end method the blood returns to the heart by anastomotic venous branches a short distance below the site of operation, and that the arterial blood in the reversed femoral vein never reaches the foot. If the circulation is to be reversed, however, it should always be done by lateral anastomosis and not by the end-to-end method. I have devised a clamp for lateral anastomosis of blood vessels. It is 5 inches in length, has delicate curved blades, and the handles are in an axis with an imaginary line drawn from the tip to the heel of the blades. This permits the handles to lie flat and they are out of the way during suturing. The forceps can also be used for temporary occlusion of blood vessels and for the cure of arteriovenous aneurysms. In a lateral anastomosis the vessels are clamped by two of these forceps and held together by two sutures near the end of the proposed anastomotic opening. The opening is made with scissors and a tractor suture is placed in the outer wall of each vessel but not tied. The suturing is done with a curved needle, the knot being on the outside. A continuous overhand stitch is used, beginning at the angle near the handles, and when the other angle has been reached, one of the tractor sutures in the outer wall is withdrawn and a tractor suture placed so as to unite both walls. This, when pulled on, everts the intima and makes the suturing easier. The thread is tied to the short end which is grasped in the hemostat when the first knot of the continuous suture is made. In using the forceps for arteriovenous aneurysm the vessels are first dissected down to the aneurysm, and first the artery, then the vein, is grasped by the forceps near their point of communication. The communication between them is then divided and the opening sutured. This makes the operation easier even when a tourniquet is applied, but it should be especially valuable where no tourniquet can be used, as in the upper femoral region.

DISCUSSION

DR. E. P. RICHARDSON, Boston: I have used the K-B method in a number of cases and find it extremely simple and efficient. There has been no trouble from the clotting of blood in the tube during the transfer from the donor to the recipient.

DR. JOHN D. S. DAVIS, Birmingham: One advantage of the Kimpton-Brown tube is that we can estimate the amount of blood transfused.

DR. WILLIAM R. JACKSON, Mobile: The only criticism I have to make on the use of this tube is the difficulty of the technic. When you take the tube out and put another one in the vein a blood clot is liable to form in the vein.

Dr. Oscar H. Elbrecht, St. Louis: I have done a number of direct transfusions after the method of Crile on dogs and on four human subjects, and I have been unable to tell whether I got 2 ounces or 2 pints in any of those patients.

Dr. Charles H. Mayo, Rochester, Minn.: In regard to arteriovenous aneurysm, frequently the opening between the artery and vein is only as large as the artery, and whenever it is found that it is not larger than the artery, if a permanent ligature is put around the anastomosis and drawn tight or snug, it will work satisfactorily, although this is contrary to the teachings of the old text books. I have tried it on the popliteal artery and it has worked admirably.

Modification of Lane's Plates

Dr. H. Stuart MacLean, Richmond, Va.: When a Lane plate has first been properly and firmly applied it is calculated to maintain from the outset close, accurate approximation of the fractured ends. It is this rigidity which tends to bring about delayed or non-union. In the process of healing of a transverse fracture of a long bone the natural result is a slight degree of shortening which is explained by absorption of bone tissue from both the fractured ends. It follows then that with the rigidly and accurately applied Lane plate the attrition and absorption in the fractured ends give a degree of actual separation of the ends in from two to four weeks which is as firmly maintained as is the accurate approximation when the plate is first applied. In order to overcome this difficulty I have had the plates made with an oblong opening in one end instead of the usual round opening for the screw. When the plate is applied the screws are placed at the distal end of the oblong opening, and as attrition and absorption occur the action of the muscles along the line of fracture will cause the approximation to be continued by the slipping of the screws in the oblong slot. Roentgenograms show that the screws do slip in this slot from one-third to the entire length of the opening.

DISCUSSION

Dr. Henry O. Marcy, Boston: The less we damage the tissues in treating a fracture, the easier we bring the parts in coaptation and fixation, the safer and surer the result, and the posterior splint which has been developed during twenty years gives fixation of the greatest possible value in the application of mechanical means for the reduction and retention of fractured bones.

Dr. J. M. Mason, Birmingham: There are four points which should govern us in deciding in any individual fracture whether or not it should be treated by the open method. First, any fracture, where coaptation is necessary, and where we are unable to coapt the fragments, should be treated by the open operation. Second, we ought to consider the probable functional result in a given case without perfect reduction. In many instances, especially in women, in fractures about the shoulders and arms and exposed parts of the body, they ought to be informed of the absolute inevitableness of putting a screw in any fracture we are going to open. Then we must consider the possibility of sepsis and non-union.

Dr. H. H. Trout, Norfolk, Va.: We had a series of roentgenograms after Lane plate cases which disclosed a bony deposit opposite the plate.

Dr. W. B. Coley, New York City: The pendulum has swung too far in the direction of the operative treatment of fractures.

Dr. W. D. Haggard, Nashville: Some reference ought to be made to the bone inlay, because it is much more easily applied than the peg or dowel.

Dr. Oscar H. Elbrecht, St. Louis: Ivory plates are absorbed within ten months. The fixation by them is firm and they do not have the objection of the screw, because there is decided traction of one or more screws, thereby producing slight tissue necrosis from pressure of the screw itself.

Dr. Battle Malone, Memphis: In many old cases of non-union, the ones in which we usually make use of transplants, there is such a degree of rarefying osteitis that the bone tissue at that point is not adaptable or suitable for transplantation. It is more preferable to take a transplant from some other part of the body.

Uterine Prolapse

Dr. Charles H. Mayo, Rochester: With retroversion and descent, difficult to replace because of probable associated pelvic lesions or other abdominal complaint, an intra-abdominal operation should be made on the round ligaments. If, as rarely occurs, the cervix remains too far forward, the uterosacral ligaments should also be shortened to bring the uterus to anteversion. The interposition type of operation is efficient in the relief of uterine prolapse associated with extensive cystocele. The best results are secured in women having a firm uterus, which usually means an age limit within the forties. This operation relieves cystocele and descent or the first and second degrees of prolapse. In the third or fourth degrees of complete prolapse in women in the fifties, with a soft degenerating uterus undergoing rapid atrophy and in whom the torsion of the ligaments in anteversion still permits the uterus to be brought out of the body, the operation will undoubtedly fail of relief and another method should be substituted. The modified Kocher operation is occasionally made on women in the forties, in which case the tubes are divided, but it is usually reserved for women well past the change of life with atrophied uteri. For a large group of cases, or the third and fourth degrees of prolapse in patients between 45 and 65 years of age, often with atrophy of the uterus and distention of the vaginal outlet, neither the interposition nor the Kocher types of operation are indicated. In these cases the following is an effectual method of securing relief:

The cervix is grasped with two pairs of volsellum forceps and drawn well out of the vagina. A pear-shaped incision is now made with its apex 1½ inches below the external urinary meatus. It passes down each side of the cystocele and around the cervix. The sides of the incision are grasped and the vaginal wall readily separated from the bladder by blunt gauze dissection. The apex of the vaginal flap attached to the anterior lip of the cervix is turned down and the bladder rapidly separated by gauze dissection from the front of the uterus. As soon as the peritoneal fold is reached, it is incised and divided laterally. The blunt gauze dissection now separates the posterior vaginal wall from the uterus at the side and on to the broad ligaments. The sharp fork retractors are now used to draw the fundus of the uterus out of the incision as in an ordinary hysterectomy and the cervix is restored within the vagina. The broad ligaments are fully spread out on each side. Unless the ovaries are diseased they are not removed. A heavy hysterectomy forceps with long blades now grasps each broad ligament. The uterus is divided a half inch from the forceps and two more pairs are applied, one on each side, with their tips touching the culdesac behind the cervix. The uterus is then cut entirely away.

If there is any tendency of the sigmoid or omentum to prolapse, it is held back by a long pad of gauze inserted into the peritoneal opening. The pairs of forceps, two on each side, are now approximated laterally and a running mattress suture of chromic catgut is applied which passes back and forth behind the forceps completely through both ligaments at such a distance as to tighten the broad ligaments. From 1¼ to 1½ inches approximation of these ligaments is secured. The method of suture is applied so as to interlock and prevent the inward slipping of any vessels. When the suturing reaches the round ligament side it is caught into the flap anteriorly where the bladder has been separated from the interior vaginal wall. This suturing extends backward on each side from this point, catching into the broad ligaments, and then on each side into the angle of the depth of the dissection, thus compelling the bladder to rest on the broad ligaments. The loose ends of the exposed broad ligaments are now approximated by a running bottonhole stitch, extending back to the perineal position and the sides of the vaginal mucosal flaps, and closed by a running catgut suture up and back in a submucous manner. No sutures are exposed.

Radium Treatment of Fibroid Tumors

DR. HOWARD A. KELLY, Baltimore: The thirty-six patients from 30 to 67 years old were treated with radium (gamma) rays. The tumors were pedunculated, as well as interstitial and submucous. With one exception, radium has either caused the tumor to disappear or has so far reduced its size as to render it innocuous. In every case subjected to an intra-uterine radiation the hemorrhage was controlled, and wherever it was desirable amenorrhea has been produced. The treatments, calling for from 300 to 500 mg. of radium element, only lasted a few hours, and, as a rule, did not have to be repeated. Furthermore, they were without risk. Such a treatment is preeminently adapted to tumors in young women, in whom menstruation will sometimes be conserved, and in hemorrhage cases, especially when profound anemia is found. Radium treatment does not preclude, and in no wise complicates, a surgical operation if it is thought best to do one later.

Large Hair Cast of Stomach Successfully Removed by Gastrotomy

DR. RUDOLPH MATAS, New Orleans: A hairball weighing approximately 967 grams was removed from the stomach of a girl 19 years of age. It was shaped like an inverted gourd, and was molded to the contour of the stomach. In the dry state, it measured 18 inches in its longest diameter (along its convexity); 10¼ inches in its greatest circumference; 8¼ inches around its middle portion, and 8⅛ inches in its narrowest circumference. It consisted of a mass of matted black hair which, when dry, was felted, and gave the appearance of the hair of a wild animal. Mixed with the hair were particles of earth and vegetable food stuffs, which had gravitated to the center of the mass. The mass not only filled the stomach in its entirety, but was grasped tightly by its walls in many places. An incision 6½ inches along the anterior surface of the organ was required to permit its extraction. When removed from the stomach, it was covered with a thick slimy coat of extreme foulness. The only space for the passage of food was a narrow interspace between the mass and the lesser curvature, were fluids and semi-solid foods could be forced from the cardia to the pylorus.

Cancer of Prostate

DR. E. S. JUDD, Rochester, Minn.: In my series of 878 prostatectomies, there were 93 cancers. The youngest of these patients was 51 years, the oldest 82. In addition to these, 84 cases were diagnosed cancer but the patients were not operated on because too far advanced. In many cases the symptoms of early cancer of the prostate cannot be differentiated from adenomatous hypertrophy. Pain associated with cancer is usually more constant and more marked in the region of the prostate and is not necessarily associated with micturition. Frequency of urination is also a prominent symptom and usually one of the first to appear. Hematuria was noted in 21.9 per cent. of the cases and was a comparatively late symptom. The specific gravity of the urine was unusually low, in many instances ranging from 1.002 to 1.005. A study of the specimens removed at operation showed that in about 75 per cent. cancer was associated with hypertrophy and in the remaining 25 per cent. cancer occurred in the prostates in which evidence of hypertrophy could not be found. The benignly hypertrophied gland in some of these cases is quite as readily enucleated as in the ordinary case and unless the posterior segment is enlarged the malignant process may easily be overlooked. If the hypertrophied part is more firmly attached posteriorly or shells out with difficulty, there is always suspicion of cancer. Patients who are incurable but fairly comfortable, either with or without catheter, should not be operated on, though certain of those who have not used catheters should be advised to do so, since they may be made more comfortable by its use. In many cases the obstruction to urination is due to a benign hypertrophy. Removing the obstruction and also a part of the cancer will entirely relieve the patients for a time and they will be more comfortable than with any other procedure.

Eighty-two of the 93 patients operated on have been traced. Of these 8 have lived more than 3 years; 12 more than 2 years; 13 more than 1 year; 24 died within the first 6 months; 5 died, date unknown.

Patients still living after 6 months, 3; after 1 year, 7; after 2 years, 4; after 3 years, 3; after 4 years, 2; after 9 years, 1.

The patient who is living and free from symptoms nine years after the operation had a very small cancerous nodule removed. Many of the patients living at the present time are entirely free from symptoms. Three who were operated on within the year, yet more than six months ago, are well. In the cases of recurrence, hematuria was one of the first evidences of the recurrence. Difficulty of urination was also an early symptom and became rapidly marked in a number of cases, necessitating suprapubic cystotomy. Several patients lived more than three years without evidence of trouble, when there was a return of all of their symptoms.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

January, IX, No. 1, pp. 1-80

1 Four Years of Clinical and Bacteriologic Experience with Meningitis in New York. P. L. DuBois and J. B. Neal, New York.
2 *Lange Gold Chlorid Reaction on Cerebrospinal Fluid of Infants and Young Children. C. G. Grulee and A. M. Moody, Chicago.
3 Acidosis with Auto-Intoxication in Infants and Children. C. R. Metcalf, Concord, N. H.
4 Respiration Incubator for Energy Metabolism of Infants. J. R. Murlin, New York.
5 *Intravenous Injection of Diphtheria Antitoxin in Children. E. H. Schorer, Kansas City, Mo.
6 Sugar-Content of Blood in Childhood. M. H. Bass, New York.
7 Pocket Baby Scale. C. R. Spicer, Chicago.

2. **Colloidal Gold Reaction.**—Summing up the gold chlorid reaction as it occurs in congenital syphilis, Grulee and Moody state: There are two types of reaction which occur in cases of congenital syphilis; one in which the height of the reaction is obtained in the dilutions of 1:40 and 1:80; in higher dilutions there is a distinct tendency to less reaction, and this reaction never continues past the dilutions of 1:640, and infrequently past the dilutions of 1:160. The second reaction approaches closely that of paretic dementia and needs further investigation before it can be properly interpreted. In five cases of tuberculous meningitis the reaction was most marked in the dilutions of 1:160 and 1:320. In two the reaction was greatest in dilutions of 1:640 and 1:1,280; in one at 1:40 and 1:80. In one case the diagnosis of miliary tuberculosis with tuberculosis of the meninges was confirmed at necropsy.

In the cases of congenital syphilis included in this report the cerebrospinal fluid reacted to the colloidal gold chlorid solution always in the lower dilutions, and with a marked degree of regularity strongest in the dilutions of 1:40 and 1:80. In a small group of cases of congenital syphilis the reaction is similar to that of paretic dementia. The reaction as obtained in congenital syphilis is most nearly approached by those conditions which show a slight inflammation of the meninges or brain and are not likely to be confused clinically with syphilis. The reaction in tuberculous meningitis is found to be most intense in the dilutions of 1:160 and 1:320. It is likely that the more rapid the course the more apt is the reaction to occur in the higher dilutions. From the foregoing statistics it is evident that the Lange gold chlorid reaction is of value only as an aid in diagnosis.

5. **Injection of Diphtheria Antitoxin in Children.**—In all, fourteen children received intravenous injections of diph-

theria antitoxin from Schorer. The results and symptoms observed are compared with those obtained in the same epidemic by subcutaneous injection in seven cases. Following intravenous injections the fever and membrane disappeared sooner and the patients felt well; diphtheria bacilli disappeared more rapidly; there were fewer carriers and paralyses were less frequent than when subcutaneous injections were made. Two children died in each series; death occurred from seven to fourteen hours after the first injection in each case. All four children who died had laryngeal diphtheria, but there were seven cases of laryngeal diphtheria in the series that received intravenous injections, and only two in the series given subcutaneous injections. When given intravenously, four injections out of sixteen were followed in from one-half to one and a half hours by striking symptoms. These were usually ushered in by a marked chill, then an elevation of temperature from 103.2 to 104 F., and in two cases by respiratory distress. All of these symptoms disappeared in from three to twenty hours, when the patients usually felt entirely well. That these were serum reactions did not seem to be the case, as in none did the later serum rashes appear. When serum rashes and reactions did occur they did not differ from those following other serum injections, though none occurred in the small series of patients receiving subcutaneous injections.

Schorer does not advocate intravenous injections in all cases, but, he says, intravenous injections undoubtedly produce results more rapidly and so are to be preferred in late and severe cases. Intravenous injections is less painful at the time of administration and later, and because of the smaller number of units necessary intravenous injection is much less expensive. Entrance into the jugular vein in children is not difficult and this vessel affords a ready site for the intravenous injection of diphtheria antitoxin when the median basilic and the cephalic veins are too small. This small series indicates that there are fewer carriers and heart failures are less likely to occur following intravenous injection, but there are more immediate and serum reactions. The immediate reactions are not grave and in themselves did not seem to be a contra-indication to intravenous injection of diphtheria antitoxin.

Boston Medical and Surgical Journal

January 7, CLXXII, No. 1, pp. 1-40

8 *Relation of Tonsils, Adenoids and Other Throat Conditions to Tuberculous Cervical Adenitis. G. L. Richards, Fall River.
9 *Treatment of Tuberculous Cervical Adenitis. H. D. Chadwick, Westfield.
10 *Id. J. B. Hawes, 2d. Boston.
11 Tuberculosis from Dentist's Viewpoint. G. H. Wright, Boston.
12 Visceral Ptosis. J. T. Williams, Boston.
13 Treatment of Anteposed Uteri. H. T. Hutchins, Boston.

8. **Relation of Tonsils and Other Throat Conditions to Tuberculcus Cervical Adenitis.**—As the result of his own experience and that of others, Richards recommends that in all cases of cervical adenitis the tonsil be removed as the first procedure. If the glands are broken down, and an operation on them has to be performed, then the tonsil should be removed at the same time. That the removal of the tonsil removes all source of possible danger of infection of the cervical lymph glands is not claimed, since anatomic studies have shown that the entire area of the middle ear, eustachian tube, superior, posterior and lateral pharyngeal wall, the tonsils, base of the tongue, and posterior nares all have their lymphatic drainage area into the cervical lymph glands.

The tonsil, however, being large, and situated in the back of the mouth, in which it is very subject to infection and to pressure during the act of eating and swallowing, is probably the greatest offender. As the tonsil is such a possible portal of infection, and as its removal seems to be followed by no deleterious effects on the organism, and as it is very likely to be a source of entrance for the infection of rheumatism, Richards advises its removal in all cases of cervical adenitis, and in all children whose parents give a history of having had cervical adenitis. At the same time, one cannot say with positiveness that the removal of the tonsil will either cure or prevent cervical adenitis. Richards state that it is not probable that all enlarged cervical lymph glands are tuberculous, presumably about 80 per cent. of them are.

9. **Treatment of Tuberculous Cervical Adenitis.**—Many of the children admitted at Westfield have tuberculous cervical glands. Not many are noticeably large, but they can be readily felt on examination. Almost invariably these children also have enlarged bronchial glands, as evidenced by impaired resonance between the scapulae. As a routine part of their treatment, Chadwick puts these patients on bacillen emulsion, if they do not have more than a degree of rise of temperature, or other signs of active pulmonary disease. The initial dose is one millioneth of a milligram, and the course of treatment extends over a period of about six months, until 10 milligrams is reached; this maximum could be reached in a shorter time, but Chadwick feels that a small dose given over a longer period is more effective, and can be given in this way without causing reactions.

The result of treatment in these children is very satisfactory. The cervical glands decrease perceptibly in size, and the area of dulness over the hilus becomes smaller and less pronounced. The longer the tuberculous disease has existed in a gland the slower will be the effect of treatment. Resolution must necessarily be limited if fibroid changes have taken place. Suppuration has not occurred in any case in which it did not exist prior to treatment. This experience leads Chadwick to the conclusion that surgical interference is only necessary to remove such glands as have become caseous, or fibroid. Extensive dissections are unnecessary in these cases, as the small recently diseased glands that are left will disappear under the influence of tuberculin treatment.

10. **Treatment of Tuberculous Cervical Adenitis.**—Hawes says that surgery, conservative or, in rare cases, radical, depending on the surgeon's skill or lack of it, has its place; tuberculin in some cases does wonders, in other it plays a lesser rôle and at all events, in competent hands can do no harm. Hygienic measures including out-door sleeping, proper diet, exercise and rest, baths and heliotherapy are given their proper place as the basis of all treatment in all forms of tuberculosis while, of the greatest importance, the cleaning up of portals of entry and removal of foci of infection, such as carious teeth, diseased tonsils and adenoids, are recognized as an essential part of treatment for this condition.

California State Journal of Medicine, San Francisco

January, XIII, No. 1, pp. 1-42

14 Expert Witness from Standpoint of Attorney. O. C. Mueller, San Francisco.
15 Official Medical Experts. R. S. Gray, San Francisco.
16 Id. W. M. Cannon, San Francisco.
17 Medical Expert in American Jurisprudence. A. S. Lobingier, Los Angeles.
18 Cure of Syphilis. H. E. Alderson, San Francisco.
19 Progress in Obstetrics. A. H. Morse, San Francisco.
20 Relation of Periosteum to Bone Vitality. R. T. Stratton, Oakland.
21 Utility of Catarrhal Vaccines. F. Williams, San Francisco.
22 Some Causes of Frequent and Painful Micturition in Women. M. Molony, San Francisco.
23 Nutritional Disturbances of Infancy. G. D. Lyman, San Francisco.
24 Case of Complete Duplication of Renal Pelvis and Ureter. A. B. Cecil, Los Angeles.

Cleveland Medical Journal

December, XIII, No. 12, pp. 837-910

25 *Outflow from Liver and Relationship Between Portal and Hepatic Blood-Flow. J. J. R. MacLeod and R. G. Pearce, Cleveland.
26 Epidemiology of Whooping-Cough, Measles, Scarlet Fever and Diphtheria in Cleveland for 1913. R. G. Perkins, Cleveland.
27 History of Sugar in Animal Body. J. J. R. MacLeod, Cleveland.
28 Renal Secretory Fibers in Vagus Nerve. R. G. Pearce, Cleveland.
29 Stage Versus Class—Certain Aspects of Fever in Pulmonary Tuberculosis. G. W. Moorehouse, Cleveland.
30 Biologic Factors in Production of Wars. W. E. Lower, Cleveland.

25. **Outflow from Liver.**—A consideration of the morphologic structure of the liver suggests that the degree of tension, or the turgescence of Glisson's capsule, as determined by the blood-pressure and the size of the arterioles of the liver, may have a marked influence on the volume of the portal flow. Experiments were made by MacLeod and

Pearce to put this hypothesis to the test, and also with the hope of furnishing further data as to the relative size of the moieties of the portal and the hepatic blood. The total outflow of blood from the liver of the dog was found to vary between 1.06 and 2.40 c.c. per second and 100 gm. of liver. There is only a very general relationship between the magnitude of the flow and the mean arterial blood-pressure. Even after the vessels of the hepatic pedicle have been clamped, blood still collects in the vena cava. Part of this comes from minute lumbar veins; the remainder may be due to collateral circulation. Occlusion of the hepatic artery usually causes the outflow to diminish by about 30 per cent., but since the exact ratio between the flow in the portal vein and the hepatic artery will depend on the extent to which these vessels are under vasomotor control at the time of observation, the diminution may be considerably greater or less than 30 per cent. Occlusion of the portal vein usually diminishes the outflow by about 60 per cent.

Stimulation of the peripheral end of the cut hepatic plexus, with both artery and vein intact, causes an immediate increase in the outflow, after which this returns approximately to its original amount. This return to the normal flow is explained as due to a passive dilatation of the interlobular portal venules resulting from a lowering of the arterial tension in the capsule of Glisson. The changes in outflow following stimulation of the hepatic plexus are very much less marked, or absent altogether, when the hepatic artery is ligated. Injection of epinephrin (2 c.c. of 1 in 10,000) into the portal vein causes an immediate decrease in the outflow. This result is practically the same with unligated as with ligated hepatic arteries. It indicates that the ramifications of the portal vein in the liver are supplied with vasoconstrictor nerve fibers. Since a similar diminution did not occur when the hepatic plexus was stimulated, the portal vasomotor nerve fibers must be very feeble.

Journal of Experimental Medicine, Lancaster, Pa.

January, XXI, No. 1, pp. 1-102

31 Influence of Diet on Necrosis Caused by Hepatic and Renal Poisons; Chloroform, Phosphorus, Alcohol. E. L. Opie and L. B. Alford, St. Louis.
32 *Id. 2. Diet and Nephritis Caused by Potassium Chromate, Uranium Nitrate or Chloroform. E. L. Opie and L. B. Alford, St. Louis.
33 *New and Rapid Method for Isolation and Cultivation of Tubercle Bacilli Directly from Sputum and Feces. S. A. Petroff.
34 *Functional Effect of Experimental Intraspinal Injections of Serum with and without Preservatives. J. Auer, New York.
35 *Function of Spleen in Experimental Infection of Albino Mice with Bacillus Tuberculosis. P. A. Lewis and A. G. Margot, Philadelphia.
36 *Concerning Survival and Virulence of Micro-Organism Cultivated from Poliomyelitic Tissues. S. Flexner, H. Noguchi and H. L. Amoss, New York.

32. **Influence of Diet on Necrosis.**—The experiments conducted by Opie and Alford showed that diet exerts a profound influence on the toxicity of certain substances, namely, chloroform, phosphorus, potassium chromate and uranium nitrate, which cause necrosis of the parenchymatous cells of the liver or of the kidney. Susceptibility to intoxication with all of these substances is less after a diet rich in carbohydrate than after a diet consisting of meat. Carbohydrates protect the parenchymatous cells of the liver or of the kidneys from necrosis caused by any one of these substances. Chloroform is much more toxic to animals which have received a diet consisting in great part of fat than to those which have received meat. When fat is fed to the white rat fatty infiltration occurs in the centers of the hepatic lobules and in the loops of Henle of the kidney. The necrosis caused by chloroform has the same location. The solubility of chloroform in fat determines the increased susceptibility of animals which have received fat and stored it in the parenchymatous cells of the liver and kidney.

Susceptibility to intoxication with phosphorus which causes fatty degeneration and necrosis of the liver is not increased by a diet of fat. Necrosis caused by phosphorus occurs in the periphery of the hepatic lobule and exhibits maximum intensity in animals which have received meat. Susceptibility to intoxication with potassium chromate, which causes nephritis with necrosis of the convoluted tubules of the kidney, is not greater after a diet of fat than after a diet of meat. Susceptibility to intoxication with uranium nitrate, which causes nephritis with advanced necrosis of renal tubules, is increased by a diet of fat. The loops of Henle, in which fat is abundant after a diet of fat, are the chief site of necrosis.

33. **Isolation and Cultivation of Tubercle Bacilli.**—The work of Churchman, Krumwiede and Simons, on the effect of various dyes on the growth of micro-organisms, suggested the use of these dyes in the isolation of the tubercle bacillus to Petroff. At first an attempt was made to grow tubercle bacilli directly from the sputum on a medium containing gentian violet. Only a few Gram-positive streptococci and diplococci appeared in the tubes. These organisms were isolated and studied. A dilution of gentian violet 1 to 1,000 failed to inhibit their growth. For the elimination of some of them sodium hydrate proved to be of greater value than antiformin. To determine the bactericidal action of sodium hydrate on the tubercle bacillus, a series of tubes containing 1, 2, 3 and 4 per cent. sodium hydrate were inoculated with tubercle bacilli and left in the incubator for twenty-four hours at 37 C. At the end of that time the tubes were neutralized to litmus with normal hydrochloric acid, centrifugalized, and the sediment containing the tubercle bacilli was inoculated into tubes. After incubation for some time they showed positive growths of tubercle bacilli.

The next step was to determine what stain and dilution were most favorable for the growth of tubercle bacilli. For this purpose a series of medium containing gentian violet, methyl violet, methylene blue, crystal violet and fuchsin in dilutions varying from 1 to 1,000 to 1 to 100,000 were used. Tubercle bacilli will grow well on egg-meat juice medium containing all of the above stains even in dilution as low as 1 to 5,000, with the exception of methylene blue which gave negative results below a dilution of 1 to 25,000. In medium containing this stain the tubercle bacilli grow rather slowly, and the individual organisms are impregnated with the stain. From these results gentian violet was selected as the most favorable stain, on account of its inhibitory action on many organisms. After many attempts it was found that a medium containing whole egg, beef or, preferably, veal juice, and gentian violet gave uniformly positive results. This medium contains: Two parts of egg (white and yolk). One part of meat juice. Gentian violet sufficient to the proportion of 1 to 10,000. Tube about 3 c.c. in each sterile test-tube and inspissate for three successive days; on the first day at 85 C., until all the medium is solidified, changing the places of the tubes if necessary; on the second and third days for not more than one hour at 75 C. For the bovine type omit the glycerin and infuse the meat for twenty-four hours in water.

Method of isolating tubercle bacilli from the sputum: Fresh sputum is advisable. Equal parts of sputum (about 5 c.c.) and 3 per cent. sodium hydrate are well shaken and left in the incubator for twenty to thirty minutes until the sputum is fairly well digested. The sputum is then neutralized to sterile litmus paper with normal hydrochloric acid, centrifugalized, and the sediment inoculated into several test-tubes containing the medium.

Method of isolating tubercle bacilli from the feces: The feces are diluted with about 3 volumes of water and mixed well, then filtered through several thicknesses of gauze to remove solid food particles. The filtrate is saturated with sodium chlorid and left undisturbed for one-half hour. At the end of that time all bacteria will be found floating. This floating film is then collected with a deflagration spoon in a wide mouthed bottle, and an equal volume of normal sodium hydrate is added. This is shaken well and left for digestion in the incubator at 37 C. for three hours, in the meantime being shaken every half hour, neutralized to sterile litmus paper with normal hydrochloric acid centrifugalized, and the sediment inoculated into several test-tubes.

34. **Intraspinal Injections of Serum.**—Auer states that intraspinal injections of serum with and without preservatives (0.3 per cent. trikresol, 0.3 per cent. chloroform, 0.3 per

cent. ether) produce qualitatively the same effect on the medullary centers in the monkey and dog. The effects differ, however, quantitatively with the preservative employed, with the dosage, and with the species of animal used, the monkey being strikingly more resistant than the dog. Broadly stated, the respiration is first increased both in amplitude and rate for a short period of time; then, particularly in the dog, the amplitude decreases and the rate slows and the respiration may even stop for a shorter or longer period of time. The blood-pressure shows an initial rise followed by a gradual drop of varying degree. This drop is usually associated with a marked slowing of the pulse rate in the dog. The normal level is again reached after some minutes.

The ideal preservative for therapeutic serum would seem to be one which could be removed before injection. Ether in this respect is better than chloroform. The opsonins in antimeningitis serum are about equally affected by 0.3 per cent. trikresol, 0.3 per cent. chloroform, or 0.3 per cent. ether when tested after one week, one month and three months. When intraspinal injections are given in the human being it would seem advisable to be prepared to withdraw part of the injected fluid and to administer artificial respiration, if necessary. For a safe withdrawal of fluid the gravity method is the best; for artificial respiration Meltzer's apparatus for pharyngeal insufflation is recommended.

35. **Function of Spleen in Experimental Infection.**—The resistance to an infection with the tubercle bacillus which can be given to mice by the removal of the spleen, Lewis and Margot found, is lost when fresh spleen, either of mouse or sheep, is added to the diet. The logical conclusion that splenic function in its relation to the specific infection is restored by feeding spleen cannot, however, be drawn; because, in the first place, the character of the disease in the splenectomized spleen-fed animals differs somewhat from that in intact animals; and, second, because fresh spleen when fed to splenectomized animals apparently gives rise to an acute intoxication. This intoxication occurs quite regularly in mice. It is manifested in the infected animals and in those not inoculated. It has been seen in one of two splenectomized dogs experimented on. Up to the present it can hardly be definitely characterized but it seems to be best marked out by the specific anorexia associated with it.

36. **Survival and Virulence of Poliomyelitic Micro-Organism.**—The minute micro-organism cultivated by Flexner and his associates from poliomyelitic tissues survives and maintains its pathogenicity in cultures for more than one year. On inoculation into monkeys poliomyelitis may fail to appear on the first injection and yet follow from the effects of successive injections of the culture. Inoculations of cultures into monkeys which fail to produce paralysis may fail also to induce resistance or immunity. In this respect the action of the cultures resembles that of the virus as contained in infected nervous tissues. The lesions occurring in the spinal cord, medulla, and intervertebral ganglia of the monkeys which respond to the several inoculations of the cultures are identical with those present in the nervous organs of the animals responding to injection of the ordinary virus. Glycerinated nervous tissues derived from the monkeys responding to several injections of the cultures transmit experimental poliomyelitis to monkeys on intracerebral inoculation.

The micro-organism inoculated may be recovered in cultures from the monkeys which develop poliomyelitis; but cultivation from the brain tissue is attended with the usual difficulties surrounding the obtaining of the initial growth. The micro-organism cultivated from poliomyelitic tissues is adapted with difficulty to saprophytic conditions of multiplication, but once adapted growth readily takes place on suitable mediums. When, however, as a result of inoculation into monkeys, the parasitic propensities of the micro-organism are restored, it again displays the marked fastidiousness to artificial conditions of multiplication present at the original isolation. The experiments reported by the authors afford additional strong evidence in support of the view that this micro-organism bears an etiologic relationship to epidemic poliomyelitis in the human subject and to experimental poliomyelitis in the monkey.

Journal-Lancet, Minneapolis

January 1, XXXV, No. 1, pp. 1-24

37 *Use of Indirect or External Fixation in Open Treatment of Fractures. E. P. Quain, Bismarck, S. Dak.
38 Spina Bifida with Myelomeningocele: Removal of Myelomeningocele and Closure of Spinal Cleft by Transplantation of Animal Bone. H. M. Erenfeld, Anamoose, N. Dak.
39 Should We Mourn Loss of European Clinics? W. H. Condit, Minneapolis.

37. **Indirect or External Fixation in Open Treatment of Fractures.**—The following advantages of indirect or external fixation of fractures, especially over the technic of plating are emphasized by Quain. 1. Comparative ease and rapidity of application, permitting a surgeon of good operative judgment and technic, but lacking extensive experience in bone-surgery, to operate with reasonable safety and success and with a minimum destruction of bone elements. 2. The fixation is firm, and permits early movements of neighboring joints. 3. There is no metal in contact with the fracture line. 4. The screws are entirely removable, leaving no foreign body behind. 5. In compound fractures it holds the fragments in place, aids drainage and makes dressing convenient and painless.

Journal of Outdoor Life, New York

January, XII, No. 1, pp. 1-30

40 Last Room. M. A. Schwatt, Denver.
41 Value of and Necessity for Local Tuberculosis Hospitals. L. R. Williams, Albany, and O. R. Eichel, Buffalo.
42 *First Aid in Pulmonary Hemorrhage for Hospital and Sanatorium Patients. H. B. Freer, Oak Forest, Ill.
43 Bamford Hills Camp for Children. C. Dinwiddie, Cincinnati.
44 Antituberculosis Campaign in Texas. R. J. Newton, Austin, Tex.
45 Red Cross Seals and Antituberculosis Campaign. P. P. Jacobs.
46 Value of Periodic Health Examinations. E. L. Fisk, New York.

42. **First Aid in Pulmonary Hemorrhage.**—Freer describes a basket fully equipped to give first aid in hemorrhage and which is in use at the Cook County Tuberculosis Hospital. The basket is about 20x27 inches in size and 6 inches deep. The compartments are so arranged that every article is plainly seen and easily reached. A card is attached, giving on one side the physician's standing order, and on the other side a list of articles contained in the basket arranged according to their use. The list is as follows: 1. One rubber bib. 2. Two towels. 3. Two pus basins. 4. One ice-cap. 5. One bowl (for chipped ice). 6. One teaspoon (for chipped ice). 7. One ice pick. 8. One jar cotton pledgets. 9. One bottle alcohol 4 ounces. 10. One bottle sterile water. 11. One hypodermic syringe. 12. Three hypodermic needles (aseptic). 13. Wires for hypodermic needles. 14. Nitroglycerin tablets 1/100 grain. 15. Atropin sulphate 1/150 grain. 16. Morphin sulphate ¼ grain. 17. Pituitrin. 18. Box amyl nitrite perles. 19. Thirty-six gauze squares 3x6. 20. Solution magnesium sulphate. 21. Glass drinking tube. 22. One 6 pound paper bag.

The nurse who discovers the patient having hemorrhage attends the case; places the patient in the recumbent position with assurance that rest and quiet are of the greatest importance. A second nurse is then pressed into service. She notifies the physician in charge and returns to the bedside as quickly as may be possible with the hemorrhage basket. The assistant now takes the ice-bag and bowl from the basket and proceeds to fill them with chipped ice. The ice-bag is placed over the heart of the patient and chips of ice placed in the patient's mouth as the bleeding diminishes. If for some reason the physician is detained and the hemorrhage is profuse, the nurse proceeds to carry out the standing order by giving 1/100 grain of nitroglycerin, hypodermically. It is necessary, perhaps, that the nurse proceed further by breaking in a piece of gauze, a three minim amyl nitrite perle which is given the patient to inhale, with a word about its effect, as the sensation sometimes frightens the patient exceedingly. All patients receive as soon as possible 1 ounce or more of the saturated solution of magnesium sulphate, repeated as the physician may order. The patient is not permitted to leave his bed under any circumstances.

Kansas Medical Society Journal, Topeka

September, XIV, No. 9, pp. 325-362

47 Therapeutic Uses of Pituitary Extract. E. A. Reeves, Kansas City.
48 Why Medical Society? O. P. Davis, Topeka.
49 Nodular Headache. F. J. Moffatt, Clyde.

Kentucky Medical Journal, Bowling Green

December 15, XII, No. 24, pp. 789-822

50 Hypernephroma of Kidney. Report of Case. O. H. Kelsall, Louisville.
51 Neuritis. J. J. Moren, Louisville.
52 Cancer of Tonsil. Report of Case. J. G. Sherrill, Louisville.
53 Case of Glaucoma. C. T. Wolfe, Louisville.
54 Osteo-Enchondroma of Scapula. J. H. Peak, Louisville.
55 Derelict Kidney. Report of Case. G. H. Day, Louisville.
56 Abdominal Adhesions Prevented with Sodium Citrate in Hypertonic Salt Solution. Report of Case. J. R. Wathen, Louisville.
57 Foreign Body in Submaxillary Gland. Report of Case. J. A. O. Brennan, Louisville.
58 High Frequency Treatment of Bladder Tumors. H. Bronner, Louisville.
59 Intestinal Obstruction. J. W. Price, Jr., Louisville.
60 Ludwig's Angina. J. H. Peak, Louisville.
61 Inversion of Uterus. W. O. Roberts, Louisville.

January 1, XIII, No. 1, pp. 1-52

62 Question of Contagious Eye Diseases in Public Schools of Louisville. J. M. Ray, Louisville.
63 Four Years of Kentucky Vital Statistics. W. L. Heizer, Bowling Green.
64 Treatment of Middle Ear Through Eustachian Tube. R. W. Bledsoe, Covington.
65 Social and Economic Aspect of Deafness. I. A. Lederman, Louisville.
66 *Preparation and Use of Autogenous Vaccines. J. D. Allen, Louisville.
67 Lacerations of Perineum. H. D. Rodman, Bardstown.
68 Treatment of Diseases of Breast. G. P. Grigsby, Louisville.
69 Intestinal Catarrh. O. P. Goodwin, Pleasureville.

66. Abstracted in THE JOURNAL, Oct. 25, 1914, p. 1502.

Lancet-Clinic, Cincinnati

December 26, CXII, No. 26, pp. 689-716

70 Edema of Brain. E. M. Baehr, Cincinnati.
71 Anaphylaxis. L. A. Fox, Birmingham, Ala.
72 Glands of Internal Secretions. B. Holmes, Chicago.

January 2, CXIII, No. 1, pp. 1-26

73 Alleged Dangers of Intravenous Injections in High Blood-Pressure. J. J. Hogan, San Francisco.
74 Early Recognition of Whooping-Cough by Complement Deviation Test. A. Friedlander, Cincinnati.
75 Case of Pellagra in Cincinnati General Hospital. A. Ravogli, Cincinnati.
76 Local Anesthesia in Operations for Hernia and Lacerated Perineum. R. Duffy, Tampa, Fla.

New Orleans Medical and Surgical Journal

December, LXVII, No. 6, pp. 503-590

77 Medical Periodical and Scientific Society. F. H. Garrison, Washington, D. C.
78 *External Vaccine Therapy. H. P. Towle, Boston.
79 Trigger Finger. Report of Case. E. D. Fenner, New Orleans.
80 Use of Clamps in Resection of Bladder. Report of Case. C. W. Allen, New Orleans.
81 Necessity of More Careful Study of Renal Function Prior to Operation. E. L. King, New Orleans.
82 Case of Mucous Mastoiditis. I. Erwin, New Orleans.
83 Case Exemplifying Value of Pyelography. M. J. Gelpi, New Orleans.

January, No. 7, pp. 591-670

84 Uterine Fibroids in Pregnancy and Labor. P. Michinard, New Orleans.
85 *Experience with Endo-Aneurysmorrhaphy (Matas). H. B. Gessner, New Orleans.
86 Anatomic Explanation of Many Cases of Low Back-Ache and Sciatic Pain. J. T. O'Ferrall, New Orleans.
87 Twilight Sleep. P. J. Carter, New Orleans.
88 Ataxic Types of Polyneuritis Resembling Tabes. E. M. Hummel, New Orleans.
89 Uterine Hemorrhage at Puberty. R. Duffy, Tampa, Fla.
90 Hematuria and Its Possible Significance. F. C. Walsh, San Antonio, Tex.

78. Abstracted in THE JOURNAL, June 20, 1914, p. 1988.

85. **Endo-Aneurysmorrhaphy.**—Seven cases are reported by Gessner. Of the aneurysms three were fusiform, one false, three arteriovenous; of the latter two were varicose aneurysms, one arterial varix. Of the seven cases, four (the one false and three arteriovenous) were due to gunshot injury. Four obliterative operations were done and three restorative. No gangrene, no hemorrhage, no recurrence followed the operation. There was no mortality attributable to the operation, though one patient died of erysipelas eighteen days after operation, the infection being derived from another case; a second patient died of multilocular prostatic abscess forty-three days after operation. In the Charity Hospital of New Orleans, from 1884 to 1903, inclusive, thirty-three cases of popliteal aneurysm were treated, of which seventeen were cured, eight improved, one unimproved, seven died—a gross mortality of 21.21 per cent. for the older methods of treatment.

New York Medical Journal

January 9, CI, No. 2, pp. 49-96

91 Metastatic Complications of Suppurative Otitis Media. S. Oppenheimer, New York.
92 Some Medicomilitary Observations in Late Balkan Wars. C. S. Ford, U. S. Army.
93 Pneumococcus Infection and Immunity. R. I. Cole, New York.
94 Conservative Estimate of Radium Therapy from Clinical Standpoint. W. B. Chase, New York.
95 Should Newborn Infant Receive Anything During First Two or Three Days? C. Herrman, New York.
96 Osteo-Arthritis in Tabes Dorsalis. J. R. Martin, Philadelphia.
97 *Decapsulation of Kidney. R. R. Huggins, Pittsburgh.
98 Pituitary Extract in Postoperative Intestinal Stasis. R. Duffy, Tampa, Fla.
99 Outfit for Urethral and Bladder Irrigations. E. G. Ballenger and O. F. Elder, Atlanta, Ga.

97. **Decapsulation of Kidney.**—Decapsulation and nephrotomy in Huggins' opinion are entitled to a place in the treatment of nephritis. The success and value of the operation will depend entirely on the care and judgment with which cases are selected. It is not to be used until all other methods have failed, and when employed it must not be done indiscriminately. Its use seems to be indicated: in toxic nephritis following acute poisoning by mercury or phenol; in nephritis following infection, especially the acute infectious diseases, such as scarlet fever, etc., in which there is great edema or in the presence of uremia—its use should be considered as soon as medical measures have been thoroughly tried without relief. This is true especially in young adults and children; in severe hemorrhage complicating chronic nephritis, when the bleeding is practically limited to one side. In these cases a nephrotomy should be done to make sure of the exact cause of the hemorrhage. It may be indicated for the relief of renal pain which sometimes occurs in the course of chronic nephritis. It may be of value in uremia and anuria during the course of chronic nephritis, merely as an emergency measure. In eclampsia, when the symptoms are due to faulty action of the kidney, and in cases in which improvement does not follow delivery of child. Cases of movable kidney associated with albuminuric casts and hematuria, in which the urinary signs result from the trauma incident to the mobility, may be cured by decapsulation and fixation, but when coincident with chronic Bright's, only temporary good is effected.

South Carolina Medical Association Journal, Seneca

December, X, No. 12, pp. 732-765

100 Complete Inversion of Uterus. J. E. Pressly, Abbeville.
101 Obstetrics in Slums. S. O. Black, Philadelphia.
102 Conduct of Normal Labor. D. L. Maguire, Charleston.
103 Midwife. C. W. Kollock, Charleston.

Southern Medical Journal, Mobile

December, VII, No. 12, pp. 923-1000

104 *Profit and Loss Account of Modern Medicine. S. McGuire, Richmond, Va.
105 Importance of Fundamental Methods of Physical Examination in Practice of Medicine. W. S. Thayer, Baltimore.
106 Conservation of Children in Our Schools. J. L. Bowman, Union Springs.
107 Case of Acute Mania Following Use of Atropin in Eyes. D. Roy, Atlanta, Ga.
108 Series of Foreign Body Cases. R. H. Johnston, Baltimore.

104. Abstracted in THE JOURNAL, Dec. 5, 1914, p. 2068.

Tennessee State Medical Association, Nashville

November, VII, No. 7, pp. 271-314

109 Suprapubic Prostatectomy. Report of Cases. G. R. Livermore, Memphis.
110 Prostatic Hypertrophy. H. M. Tigert, Nashville.
111 Iodin in Diseases of Cornea. J. T. Herron, Jackson.

112 Treatment of Amebic Dysentery. O. N. Bryan, Nashville.
113 Practical Anesthesia. W. N. Lynn, Knoxville.
114 Some Early Experiences in My Obstetric Practice. R. E. L. Smith, Doyle.
115 Food Intoxications of Childhood. O. W. Hill, Knoxville.

Texas State Journal of Medicine, Fort Worth

December, X, No. 8, pp. 303-346

116 Metallic Poisoning. H. C. Hall, Aguascalientes, Mexico.
117 Diagnosis of Incipient Pulmonary Tuberculosis. R. B. Homan, El Paso.
118 Treatment of Tuberculosis; Serum or Vaccine. B. Cornick, San Angelo.
119 Can We Immunize Against Tuberculosis? J. J. Terrill, Temple.
120 Tuberculosis of Childhood. C. M. Hendricks, El Paso.
121 Blood-Pressure in Tuberculosis. B. T. Young, San Antonio.
122 Tuberculosis. M. M. Smith, Dallas.
123 Family History. W. M. Brumby, San Antonio.
124 Incomplete and Careless Examinations. G. T. Vinyard, Amarillo.
125 One Reason We Fail in Tuberculosis. I. S. Kahn, San Antonio.
126 Organic—Inorganic—Organic Cycle. J. B. Hawley, Fort Worth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, London

December, VIII, No. 3, pp. 369-640

1 Yellow Fever in Guayaquil, Ecuador. J. M. O'Brien.
2 Trypanosomiasis in Eket District of Nigeria. J. W. S. MacFie and G. H. Gallagher.
3 Id. W. C. W. Eakin.
4 Trypanosomes Found Infecting Wild Glossina Tachinoides. J. W. S. MacFie.
5 Some Blood Parasites Collected in Nigeria. J. W. S. MacFie.
6 Trypanosome of Gambian Mice. J. L. Todd.
7 Granule Phase of Spirochetes. H. B. Fantham.
8 Case of Naso-Oral Leishmaniasis and Case of Oriental Sore, Both Originating in Anglo-Egyptian Sudan. J. B. Christopherson.
9 Observations on Morphology and Biology of Auchmeromyia Luteola. J. Schwetz.
10 *Relation of Bile Pigments to Hemoglobin. J. O. W. Barratt and W. Yorke.
11 Antimalarial Campaign in Formosa. J. Hatori.
12 Klossiella in Kidney of Guinea-Pig. H. Seidelin.
13 *Changes in Neutrophil Blood Picture of Arneth in Children Living in Tropical Queensland. A. Breinl and H. Priestley.
14 Occurrence of Lead Poisoning Among North Queensland Children. A. Breinl and W. J. Young.
15 *Blood Conditions of Children of European Descent Residing in Tropical Australia. A. Breinl and H. Priestley.
16 Migration of Larvae of Onchocerca Gibsoni Through Capsule of Worm Nodule. W. Nicoll.
17 Morphology, Biology and Economic Importance of Nosema Bombi, Parasitic in Various Humble Bees. H. B. Fantham and A. Porter.
18 Schedule for Recording Cases of Blackwater Fever. J. W. W. Stephens.

10. **Relation of Bile Pigments to Hemoglobin.**—Summarizing the data obtained in their investigation, Barratt and Yorke find that consequent on intravenous injection of hemoglobin solution there is a distinct and immediate increase not only in the concentration of bile pigment, but also in the amount of bile pigment excreted. During the three or four hours following the injection of hemoglobin the amount of pigment excreted may increase to from four to six times the amount found in the samples examined before the injection. Two hypotheses are advanced to explain this increase in amount of pigment excreted, first, that the hemoglobin injected is actually converted by the liver into bile pigment, and second, that it merely stimulates the liver cells to an increased production of bile pigment. Against the former hypothesis is the fact that the increase of pigment is not so great as might be anticipated from the relatively large quantities of hemoglobin introduced into the circulation and consequent high degree of hemoglobinemia resulting (up to 20 per cent.). The amount of hemoglobin solution found in the plasma of normal rabbits is exceedingly small, varying from 0.02 to 0.05 per cent. This fact seems to indicate that the degree of red cell destruction normally occurring in the living animal is slight. Assuming that the pigment of the normal bile is derived entirely from hemoglobin set free by the disintegration of erythrocytes normally occurring in the living animal, then it is rather surprising that when the degree of hemoglobinemia is increased 400 times, the amount of bile pigment should only be increased at the most sixfold.

13. **Changes in Neutrophil Blood Picture of Arneth in Children.**—The number of polymorphonuclear neutrophil leukocytes in the blood of children living in tropical Queensland was found distinctly decreased by Breinl and Priestley, the number of the eosinophil leukocytes markedly increased. The Arneth count performed on 150 schoolchildren living in tropical Queensland showed a marked shift to the left, the Arneth index being 74.5 as compared to 40 normal individuals (Arneth) in Europe. The "shift to the left" in the Arneth blood picture is, in the author's opinion, due to the effect of a tropical climate on the white race living in the tropics.

15. **Blood Conditions of Children of European Descent.**—Careful blood examinations were performed by Breinl and Priestley on 574 schoolchildren of European descent, of ages between 7 and 15, of whom the majority had been born and had resided in tropical Queensland during their whole life. The results indicate: 1. That the average number of red blood corpuscles is not diminished when compared with analogous figures for children born and bred in a temperate climate. 2. That the average hemoglobin content of the blood is normal. 3. That the number of leukocytes is slightly increased. 4. That the average blood-pressure does not show any difference from that of normal children in temperate climes.

British Medical Journal, London

December 19, II, No. 2816, pp. 1053-1092

19 Work of "Clearing Hospitals" During Past Six Weeks. A. Bowlby.
20 *Potassium Permanganate in Sloughing and Tetanus-Infected Wounds. L. Rogers.
21 *Iodin as an Antiseptic in Joint Injuries. A. G. Wildey.
22 Simple Form of Portable Dressing Sterilizer. C. W. Cathcart.
23 Kala-Azar or Parasitic Splenomegaly and Allied Infections. P. W. Bassett-Smith.
24 *Is Emetin Sufficient to Bring About Radical Cure in Amebiasis? L. Phillips.

December 26, No. 2817, pp. 1093-1124

25 Color Vision and Tests for Color Blindness. C. D. Marshall.
26 Colectomy for Intestinal Stasis. Report of Four Cases. A. W. Sheen.
27 *Operation for Movable Kidney. G. S. Thompson.
28 Cockroaches. A. E. Shipley.
29 Case of Tetanus Treated by Injections of Phenol. P. Stewart and J. T. C. Laing.

20. **Potassium Permanganate in Sloughing Wounds.**—For several years past Rogers has treated cancrum oris with very frequent washing with a dark purple solution of potassium permanganate (about 1 in 500), together with swabbing the ulcerated surface with a 1 per cent. solution two or three times a day. In several cases this treatment has stopped the sloughing of the tissues, and complete healing has followed, while in more than one patient recovery from kala-azar has ensued. In the case of a most extensive and deeply sloughing bed sore right across the sacrum, occurring in a remarkable case of streptococcal pneumonia and septicemia, in which the patient who had got over the lung inflammation, but was slowly sinking, apparently through septic absorption from the sloughing sacral ulcer, several layers of lint soaked in 1 per cent. solution of potassium permanganate, and covered with water-proof material, were placed on the bed sore and changed every four hours with the result that the ulcer rapidly cleaned up and began to heal, and the man ultimately left the hospital cured. In another case of a severe bed sore in a bad case of typhoid in an obese subject, an equally favorable result was obtained by this treatment after other means had failed. In two cases of suppurative onychia after a variety of antiseptic applications during several weeks had completely failed to control the infection, the application of a strong solution of permanganate, until it was no longer decolorized on coming into contact with the discharge squeezed out from around the nail, completely cleared up the condition within three or four days.

Rogers believes that the most important action of potassium permanganate is its power of oxidizing and rendering harmless the toxins produced by bacteria, which produce a negative chemotaxis, and thus prevent the phagocytic polynuclear leukocytes from dealing with the invading organisms. When their toxins are destroyed by the permanganate they no longer repel the phagocytes, which can now protect the system against their invasion in a manner which nonoxidizing antiseptics fail to allow. Rogers is of the opinion that the use of strong permanganate solutions, not less than 1 in 500, for irrigating all dust and earth-infected wounds is well worthy of trial in the field.

21. **Iodin as an Antiseptic in Joint Injuries.**—Thorough skin toilet, paring of every particle of soiled and badly damaged tissue, swilling with iodin 2 per cent. in alcohol and with saline alternately, closure of the wounds by piling up the skin edges with mattress sutures to ensure complete coaptation, and the avoidance of artificial drainage—have been employed in all cases of lacerated wounds and compound fractures, and wounds of joints treated by Wildey in the naval hospitals of Chatham, Plymouth, and Haslar during a period of four years. No other antiseptic than iodin is used in contact with the wounds. The results have been most gratifying. Sepsis has been extremely rare, and when it has occurred has invariably originated in the skin wound and never in the depths of the wound. The mattress sutures employed reduce the chances of infection by the skin wound. Every effort is made to secure rapid healing of the skin. Every particle of damaged skin is removed, plastic maneuvers being sometimes necessary to secure easy coaptation. A loose stitch or two permits free drainage of serum, and these gaps are closed as soon as possible. It is a great safeguard to spray the wound daily with iodin.

24. **Is Emetin Sufficient to Bring About Radical Cure in Amebiasis?**—The following line of treatment is suggested by Phillips. The administration of emetin hypodermically for at least ten days or longer if the state of the patient demands it, followed by the oral administration of the drug. This is to be followed by subsequent courses of increasing intervals, as is the practice with syphilis or malaria, and in the intervals courses of calomel combined with thymol; if this is not sufficient, some other intestinal parasiticide should be tried. No man should be considered cured until, after several examinations, no cysts of *Entameba histolytica* are to be found in the feces. Further, all carriers, even though they may never have had dysenteric or other symptoms, are to be considered as cases of amebiasis and treated as such.

27. **Operation for Movable Kidney.**—The principle of Thompson's operation is the insertion of the kidney into, and its suspension by a sling, and the fixation of the latter to the posterior abdominal wall. The sling consists of a net made from chromicized catgut, or floss silk, the material varying according to the predilection of the surgeon. These slings are made in various sizes to meet the requirements of the particular case. A gap is left at the hilum 2 inches long by 1 inch broad, so that the border of the net here falls well short of the vessels and duct, and thus no pressure can be exercised on these important structures. The convex border is left open to facilitate the insertion of the kidney into the sling, and at the ends of this opening two free ligatures are left open for the purpose of lacing up the gap, and then used to sling the net to the abdominal wall. The complete sling is thus reinform with a permanent gap at the hilum and a temporary slit along the outer border, the size of the mesh being about 0.5 cm.

The kidney, having been exposed in the usual way, is inserted through the gap and by the help of the slit into the sling; it is then laced in, but loosely, and when this is completed the ligatures are knotted and thus fixed, the lower ligature ending above opposite the costal groove on the kidney. One or two fixation sutures include the net and kidney and maintain the proper relative positions of both. The kidney having been invested, the next step is to fix it in position by the free ligatures along the outer border. One is passed external to the normal position of the kidney over the twelfth, or if necessary the eleventh rib, the other through the muscles near the lower end of the viscus and the two ends tied loosely under the skin in order that the kidney may be free to move with respiration and adapt itself spontaneously to the exact position, after the patient has been placed in bed with the foot blocked up. The remaining steps of the operation are as usual. Thompson claims that the netting will provoke a celluloplastic exudation which will surround and infiltrate the mesh-work, and in time form by organization a firm adventitious tissue capsule in addition to the extraneous capsule already present.

Journal of Tropical Medicine and Hygiene, London

December 15, XVII, No. 24, pp. 369-380

30 *Occurrence of Certain Structures in Erythrocytes of Guinea-Pigs and Their Relationship to So-Called Parasite of Yellow Fever. C. M. Wenyon and G. C. Low.
31 Transmission of Trypanosoma Brucei of Nigeria by Glossina Tachinoides. G. H. Gallagher.

30. **Erythrocytes of Guinea-Pigs and Their Relationship to Parasite of Yellow Fever.**—In the blood of normal guinea-pigs, born and bred in England, Wenyon and Low found bodies indistinguishable from the so-called *Paraplasma flavigenum* of Seidelin. In most cases these appear to be definite structures which probably have to do with the development or degeneration of the red cells. They are not parasitic because they occur in the blood of newly born animals, not forgetting even the possibility of a placental transmission. The apparent success of the inoculation into guinea-pigs of such bodies from yellow fever cases is due to a failure of a sufficient examination of control animals. The authors are convinced that the evidence in favor of the yellow fever bodies being parasites thus breaks down, and that the presence of such bodies in yellow fever bears, therefore, no diagnostic significance apart from the evidence of blood alteration.

Lancet, London

December 26, II, No. 4765, pp. 1451-1502

32 *Modern Aspects of Certain Problems in Pathology of Mental Disorders. E. Goodall.
33 Case of Intestinal Obstruction. A. W. Jones.
34 Stretchers for Wounded in Trenches. G. K. Aubrey.

32. **Certain Problems in Pathology of Mental Disorders.**—Out of 19 cases of dementia paralytica examined by Goodall in which 0.2 c.c. of pure cerebrospinal fluid was used for the test, 11 gave a positive Wassermann and 8 a negative one; and out of 14 cases in which 1 c.c. was used, 10 gave a positive and 4 a negative reaction. Whereas the figures for other forms of insanity were, with 0.2 c.c. all negative in 13 cases; with 1 c.c., 5 positive out of 12; but as 3 of these were certainly or possibly cases of cerebrospinal lues, only 2 out of 12 were positive in non-general paralytics and non-syphilitics with 1 c.c. as against 10 out of 14. The deductions drawn by Goodall in respect to the employment of increasing strengths of cerebrospinal fluid amboceptor are that a positive Wassermann with 0.2 c.c. of a 1 in 10 solution indicates dementia paralytica, but a negative reaction with any strength up to even 1 c.c. of the pure fluid does not exclude this disease if only once obtained; that negative reactions with large amounts of fluid are not infrequently obtained in, at any rate, the more quiescent periods of the disease, or in slowly progressive cases; that in such periods and cases the complement-deviation method cannot be relied on for diagnosis between dementia paralytica and cerebrospinal lues.

Goodall and his associate, Schöelberg, also tested the hemolytic property of the serum and of the cerebrospinal fluid, respectively, from patients with mental disorder, against sheep's blood corpuscles. Fourteen cases of insanity other than of general paralysis and fourteen cases of general paralysis are dealt with. As regards the non-general paralytics there is absence of hemolysis with the "normal" cerebrospinal fluid in every case; from which it is to be inferred that complement or hemolytic amboceptor, or both are lacking in the cerebrospinal fluid. The addition of hemolytic serum (on the basis of the titer ascertained for the Wassermann test) made no difference except in one case (hemolysis); the subsequent addition of complement produced hemolysis in all the other tubes. In 4 out of 14 tubes containing complement $H = +$, but in the remaining 10 $H =$ slight or absent, showing that either insufficient complement had been used or that amboceptor was deficient, or showing both. The appearance of hemolysis in 5 out of 8 cases, on adding amboceptor shows that amboceptor was deficient in them; but in the remaining 3 hemolysis was brought about on further addition of complement.

As regards the general paralytics (14 cases) there is absence of hemolysis in all but two of the "normal" tubes, in which it occurred to a slight extent. The addition of hemolytic serum made no difference except in one case, in which hemolysis resulted. In the other cases hemolysis was produced by subsequent addition of complement. In 8 out of the 14 complement-holding tubes $H = +$; in 4 others $H =$ slight; in 2 others H was absent. In 5 of these last 6 (H slight or absent) hemolysis was rendered complete or brought about by adding amboceptor or amboceptor and complement. The conclusion is that there is absence or deficiency of complement in the cerebrospinal fluid in dementia paralytica, and there is sometimes deficiency, at any rate, of amboceptor.

Bulletin de l'Académie de Médecine, Paris

December 8, LXXII, No. 39, pp. 317-348

35 Tetanus; Twenty-Four Cases. Boquel and C. Achard.
36 Three Months' Experience with War Wounds. (Plaies de guerre.) H. Hartmann. See Paris Letter, p. 259.
37 Therapeutic Injections of Aged Cultures. P. Delbet, Beauvy and Girode.

Archiv für Gynaekologie, Berlin

CIII, No. 3, pp. 395-589. Last indexed January 2, p. 89.

38 *Contracted Pelvis at Innsbruck. (Die Geburtsleitung bei engem Becken an der Innsbrucker geburtshilflichen Klinik in den letzten 15 Jahren mit bes. Berücksichtigung der daselbst ausgeführten Kaiserschnitte.) O. Nebesky.
39 General Anesthesia in Gynecology. V. (Extradurale Anästhesie.) H. Schlimpert.
40 Early Stages and Abortive Forms of Corpus Luteum Production. J. Wallart.
41 Ovarian Hemorrhages. (Ovarialblutungen.) V. Cantoni.
42 Relations Between Corpus Luteum and Menstruation. J. Halban and R. Köhler.

38. **Contracted Pelvis.**—Nebesky states that in 10.5 per cent. of 15,998 obstetric cases at the Innsbruck maternity the accoucheur had to contend with a contracted pelvis. About 44 per cent. of the women were primiparae, and 61.4 per cent. of the total 1,673 pelves were of the flat type with evidences of rachitis in 18.3 per cent. and of rachitis plus contraction in an additional 8.9 per cent. He devotes nearly a hundred pages to analysis of this material from various standpoints. Fully 10 per cent. more of the children die with pelvic than with cephalic presentation. He repudiates prophylactic version, and with transverse presentation seeks to change it to vertex by manipulation from without. In case of prolapse of the cord, he reduces this before proceeding farther. With primiparae and with a moderately contracted pelvis, expectant management of the case should be the rule.

If the history of former deliveries or the size of the head suggests that spontaneous delivery cannot be expected, then cesarean section should be done at once, just after or before the first labor pains. This has several advantages, and the transperitoneal incision in the cervix he commends as the preferable technic. By operating thus early, complications are avoided and the mother is saved unnecessary stress. If complications are already installed, we must be ready to sacrifice the child in the interests of the mother, and a cautious attempt at forceps extraction may save the fetus from perforation. No form of cesarean section is applicable, he thinks, in infected cases of contracted pelvis. If cesarean section is refused, then premature artificial delivery is the next best. It should be managed with cephalic presentation the same as a normal delivery. Since the above principles have been systematically applied, 3.7 per cent. more children have been born alive with simple flat pelvis; 9.4 per cent. more with rachitic flat; 6.7 per cent. more with generally contracted pelvis, and 23.1 per cent. more with rachitic contracted pelvis. Only 11.1 per cent. of 898 children died among the multiparae, in contrast to 18.3 per cent. of 2,431 in the cases in former years managed under different principles.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 7, XLIV, No. 45, pp. 1393-1424

43 Operative Treatment of Puerperal Fever. A. Schwyzer (St. Paul).
44 Some Minor Points in Obstetric Practice. (Technische Neuerungen in der geburtshilflichen Hauspraxis.) E. Schwarzenbach.
45 Eczema Spreading through Day Nursery after Vaccination; Twenty-Three Cases. L. Bossart.

November 14, No. 46, pp. 1425-1456

46 *Upset in Fluid and Salt Balance in Certain Cases of Constitutional Obesity. M. Düring.

November 21, No. 47, pp. 1457-1488

47 *Serology as Key to Certain Problems of Heredity. (Vererbungsprobleme in der Immunitätsforschung.) L. Hirschfeld.
48 Isolated Traumatic Rupture of the Spleen. J. Bauer.

November 28, No. 48, pp. 1489-1520

49 *Salol-Phenol Prophylaxis of Tetanus. C. Arnd and F. Krumbein.
50 Surgical Experiences in the Balkan Wars. K. Reber.

46. **Upset in Fluid and Salt Balance in Obesity.**—Düring writes from the pharmacologic institute at Basel, in charge of Prof. A. Jaquet, to report extensive and protracted study of the metabolism in five cases of constitutional obesity. The findings show that a large part of the excess in weight is due, not to deposits of fat, but to retention of water. It is impossible to say whether this is the result of insufficiency on the part of the kidneys or to constitutional anomalies in the tissue cells with abnormal osmotic processes. There was also in his cases a tendency to a neuropathic constitution. Disturbance of kidney functioning may accompany emotional stress, neurasthenia, epileptic seizures, etc., confirming the influence of the nervous system on kidney functioning. He cites a number of cases in which after a severe fright adults increased in weight by more than 70 pounds in three months and the weight persisted at this high figure. One patient was a nervous woman of 43 weighing about 149 pounds. On a salt-poor diet she lost 1.5 kg. in six days. Then came some emotional stress, connected with getting a divorce, and in five days the weight ran up 1.7 kg. while the total urine dropped from 1,550 to 980 c.c. She was quieted with bromids and under increased diuresis the weight dropped back again in two days by 1.7 kg. These fluctuations were the more remarkable as the patient was too worried to eat.

His experiences teach that the conception of obesity will have to be broadened to take in more factors than those hitherto accepted. In three of his cases the thyroid seemed not to have reached full normal development, although the women were 40 to 52 years old. Each had borne healthy children. On food rich in albumin with normal salt content, the weight remained constant or increased. With muscular exercise also the weight increased. On the other hand, a milk diet and repose increased the total output of urine and the patients lost in weight. This occurred also when the food contained little albumin or salt. The weight declined also under thyroid treatment plus repose.

47. **The Blood and Problems in Heredity.**—Hirschfeld has been applying the Mendelian laws to the inheritance of the characteristics of the blood. The results justify the hope that study of the blood of different peoples may throw light on their racial history, migrations and intermarriages.

49. **Prophylaxis of Tetanus.**—Supplementary to the usual antitetanus serum treatment, Arnd and Krumbein advocate copious use of phenol, either by the Baccelli subcutaneous injection method or by administration by the mouth of salol, or both. By this means the entire organism is kept under the influence of the phenol. Experiments on several dozen white mice showed that the Baccelli injections retarded and attenuated experimental tetanus. It is a simple and harmless matter, they declare, to take 1 gm. of salol every four to six hours after a wound in which tetanus is liable to develop. The animal experiments confirm the value of this as a preventive measure. Sahli has long advocated salol in treatment of tetanus.

Deutsches Archiv für klinische Medizin, Leipzig

CXVI, Nos. 5-6, pp. 437-615. Last indexed Jan. 2, p. 90

51 Favorable Effect of Caramelized Sugar on Normal and Diabetic Individuals. E. Grafe.
52 *Diseases of the Hypophysis and the Functional Diagnosis of Polyglandular Diseases. K. Csepai.

53 Clinical Electrocardiography. A. Weil.
54 Periods of Tension and Expulsion in the Heart's Systole. (Ueber die Anspannungszeit und Austreibungszeit des Herzens.) W. Weitz and Graner.
55 Extra-Intestinal Metabolism. (Zur Frage des parenteralen Stoffwechsels.) A. Dembicki and J. Löwy.
56 Influence of Infections on the Blood Picture in Anemia. (Zur Beeinflussung des anämischen Blutbildes durch Infektionen.) H. Pribram.
57 Causes of Heart Gallop Rhythm. M. Gubergritz.
58 Effect of Chronic Kidney Disease on Excretion. (Untersuchungen an Nierenkranken. II. Ueber die träge Einstellung der Sekretion bei Belastung.) H. Doll and R. Siebeck.
59 The Blood-Forming Cells in the Liver in Congenital Syphilis, with Special Reference to Lymphocytes and Plasma Cells. C. A. Müller.

52. **Disease of the Hypophysis.**—Csepai describes in detail three cases of acromegaly and two of adiposity plus genital dystrophy. In one of the cases of acromegaly there was an adenoma of the glandular part of the hypophysis, the histologic structure of which corresponded to the normal structure of the hypophysis. Among the other glands of internal secretion, marked pathologic changes were found in the thyroid, thymus and ovaries. In one of the cases of the dystrophia adiposo-genitalis there was an adenoma of the anterior part of the hypophysis. It showed an active tendency to spread and its structure was completely different from that of the normal hypophysis. The direct cause of the disease was apparently the degeneration of the pars intermedia of the hypophysis. The thymus, the parathyroids and the ovaries also showed pathologic changes. His research indicates that the cause of hypophyseal diabetes insipidus is hypofunctioning of the pars intermedia. This is shown by the fact that in one case injection of epinephrin caused a fall of 40 per cent. in the daily output of urine, and also by the fact, which has never yet been sufficiently emphasized, that diabetes insipidus is often combined with the syndrome of adiposity plus defective development of the genital organs. In all of the five cases there was leukopenia, with relative mononucleosis. In one of the cases of acromegaly there was also marked eosinophilia. In the first and second case of acromegaly, carbohydrate tolerance was very much decreased. In the other case of acromegaly and in the two of dystrophia adiposo-genitalis it was normal or increased. He suggests two new methods for functional diagnosis in disease of the ductless gland system: 1. The reaction of the conjunctiva to epinephrin. Under normal conditions three drops of 1 to 1,000 solutions of epinephrin cause a slight or moderate blanching of the conjunctiva that lasts for ten to twenty minutes. If, when the solution is instilled, the reaction is exaggerated, this indicates hypofunctioning of the epinephrin-producing system. 2. Study of the quantitative and qualitative blood changes after injection of epinephrin. Injected subcutaneously in a normal individual, epinephrin causes leukocytosis with increase of neutrophils and decrease in the number of eosinophils and mononuclears. If there is any variation from this effect it indicates disease of the ductless gland system. (Compare with editorial in The Journal, Dec. 2, 1911, p. 1840.)

Deutsche medizinische Wochenschrift, Berlin

December 3, XL, No. 49, pp. 2025-2052

60 War Injuries of the Visual Apparatus. (Verletzungen des Sehorganes im Kriege.) E. Hertel.
61 *Intestinal Disease Resembling Dysentery. (Ueber ruhrähnliche Darmerkrankungen.) E. Leschke.
62 Gunshot Wounds of the Calves. (Wadenschüsse.) E. Senger.
63 Some Common Errors in Treatment of Wounds. (Zur Wundbehandlung.) Link.
64 *To Prevent Inactivation of Diphtheria Antitoxin on Reinjection. (Die Schutzwirkung des Diphtherieserums bei der Reinjektion.) O. Hartoch and W. Schürmann.
65 Vaccine Diagnosis and Treatment of Gonorrhea. G. Stümpke.
66 *Bases for Treatment of Sleeping Sickness. (Grundlagen für eine Therapie der Schlafkrankheit.) E. Reichenow.
67 Improved Rulings for Blood-Count Chamber. (Meine Netzteilung für die Zählkammer.) N. Goriaew.

61. **Intestinal Disturbance Resembling Dysentery.**—Leschke reports eight typical cases to show that what seems to be true dysentery may prove on bacteriologic examination to be a harmless and transient intestinal trouble, not requiring isolation. He treats it with bed-rest, fluid and soft foods, moist heat to the abdomen, with or without some magnesium preparation, but the main reliance is on charcoal tablets which are taken frequently up to fifteen, twenty-five or more during the day. The finely pulverized charcoal, especially blood charcoal, absorbs the toxins and products of putrefaction, and in a few days as the stools become normal the ordinary diet can be resumed.

64. **Protective Action of Diphtheria Antitoxin on Reinjection.**—Hartoch and Schürmann treated guinea-pigs with both diphtheria antitoxin and toxin—aiming to induce conditions as in a case of human diphtheria given antitoxin treatment. Then as the animals were in a kind of sensitized condition, a subcutaneous injection of antitoxin was given and the blood tested for the amount of protection thus afforded. It was found from eight to thirty-two times less than in the previously untreated animals. At the same time, if the condition of anti-anaphylaxis is induced by subcutaneous injection of small doses, then the subcutaneous injection of antitoxin following confers the same protection as in the previously untreated animals. They think that these experiences explain why the second injection of antitoxin in the clinic sometimes has proved ineffectual. The most important lesson learned from them, however, is that Besredka's suggestion of preliminary subcutaneous injection of small doses of antitoxin not only protects against danger of anaphylaxis from reinjection but it also protects the antitoxin against being rapidly inactivated.

66. **Sleeping Sickness.**—Reichenow remarks that trypanosomiasis of the blood does not become sleeping sickness until the trypanosomes get into the cerebrospinal fluid. They can be reached by drugs when they are in the blood, but this is a more difficult matter when they are ensconced in the cerebrospinal fluid. He has been giving neosalvarsan in intraspinal injections, and also experimenting with alcohol which we know passes into the cerebrospinal fluid. The number of trypanosomes in the fluid markedly declined after the patients had taken by the mouth 200 gm. alcohol on three successive days. He never succeeded by this means, however, in clearing out all the trypanosomes from the fluid, but some drug may yet be found which diffuses into the fluid and will kill off all the trypanosomes.

Deutsche Zeitschrift für Chirurgie, Leipzig

November, CXXXII, Nos. 1-2, pp. 1-208

68 Tumors of Carotid Gland. H. Steindl.
69 Tumors at Base of Tongue. (Zur Kenntnis der Zungenbasisgeschwüre.) A. Wagner.
70 Clinical and Experimental Study of Hormonal and Neohormonal. G. Dencks.
71 *Stretching the Solar Plexus in Treatment of Gastric Crises. R. Leriche (Lyons).
72 *Stretching and Severing Perivascular Nerves in Various Painful Symptoms of Complex Arterial Origin and in Trophic Disturbances. R. Leriche.
73 *Aerophagia from Surgical Standpoint. R. Leriche.
74 Spontaneous Rupture of the Bladder. (Spontane Harnblasenzerreissung.) E. Moser.
75 Hemorrhage After Nephrotomy and Its Prevention. A. A. Tschaika.
76 Hygroma of the Semimembranous Bursa. B. Riedel.
77 Painful Ganglia in Tendons, Tendon Sheaths or Knee. B. Riedel.
78 Prehistoric Use of Charcoal and Sugar for Dressing Wounds. (Köhle und Zucker zur Verbandzwecken.) H. Schelenz.
79 Field Surgery. (Feldlazarettchirurgie.) L. Oelsner.
80 Indirect Fractures and Injury of Nerve Tissue in War. G. Perthes.
81 Solitary Cyst in the Kidney. N. Paus.

71-73. **Surgical Treatment of Gastric Crises, of Painful Arterial Affections and of Aerophagy.**—Practically the same articles as these by Leriche were summarized in these columns in the last volume, 1914, lxii, pages 971, 1203 and 1854. A foot-note to the articles states that they were received by the publishers of the *Zeitschrift* before Aug. 1, 1914.

Internationale Monatsschrift für Anatomie und Physiologie, Leipzig and Chicago

XXXI, Nos. 4-6, pp. 129-304

82 Comparative Anatomy of the Development of the Pituitary Body. (Sullo sviluppo del lobo ghiandolare dell'ipofisi negli Amnioti.) A. C. Bruni (Turin).

83 Human Embryo Consisting of Twenty Segments, in Extreme Dorsal Flexion. (Description d'un embryon humain (Eternod-Delaf), de 20 somites, avec flexion dorsale.) E. Bujard (Geneva).
84 The Vital Staining of Mitochondria with Janus Green and Diethylsafranin in Human Blood Cells. E. V. Cowdry (Baltimore).
85 The Nerve End Bulbs in the Papillae of the Skin. (Contributo allo studio delle espansioni nervose nel derma della cute umana.) F. Simonelli (Siena).

Medizinische Klinik, Berlin

December 6, X, No. 49, pp. 1755-1789

86 *Rheumatic Disease in the Field. A. Schmidt.
87 Wounds of the Eyes in War. (Augenverletzungen im Kriege und ihre Behandlung.) C. Adam.
88 Surgical Experiences in a Field Hospital. M. Strauss.
89 Epidemics in War. (Kriegsseuchen.) G. Joannovics. Commenced in No. 47.
90 Technic for and Clinical Importance of Examination of Conditions in Regard to Coagulation of the Blood. (Blutgerinnungsuntersuchungen.) W. Schultz.

86. **Rheumatism Among the Soldiers at the Front.**—Schmidt has had a number of cases of acute articular rheumatism, myalgia, neuralgia, etc., among the sick soldiers sent back home. In almost every instance he was able to learn of some preceding tonsillitis or rheumatic affection. In many cases of intestinal trouble or dysentery he has seen swelling of several joints, as also with suppurative colitis, demonstrating that the intestinal mucosa serves as a portal of entry for general infection more frequently than is ordinarily recognized. In other cases the joint swellings were evidently a symptom of septic conditions as the spleen was enlarged and there was high intermittent fever, with albuminuria and sometimes migrating pneumonia. The portal of entry here was evidently the gunshot wound, although this had healed in the interim. He learned further that from one-third to one-half of the rheumatism patients had already had attacks of rheumatism before the campaign. The legs are affected much more than the other joints and the men ascribe this, as well as the rheumatism in general, to the wet and cold in the trenches, but Schmidt thinks that the strain of the long marches is a more plausible explanation. In many cases an obstinate "rheumatic affection of the foot" turned out finally to be a "march fracture" of some metatarsal bone, or flat-foot derangement. His experience has continued to confirm the benefit liable from injection of salt solution or 0.5 per cent. solution of novocain. With myalgia, he makes the injection at the point where the pain is greatest. With neuralgia, at the point most sensitive to pressure; with more diffuse pain, as with bilateral sciatica, severe lumbago or migrating myalgias, the injections should be given by the epidural or lumbar intraspinal technic.

Therapie der Gegenwart, Berlin

December, LV, No. 12, pp. 457-482

91 *Inflammation of the Mucosa of the Mouth. (Mundschleimhautentzündungen.) F. Williger.
92 *Treatment of Chronic Constipation. (Obstipation.) G. Rosenfeld.
93 Cure of Inflammatory Pelvic Tumors by Weak Galvanic Current. (Ueber Heilung entzündlicher Beckentumoren mittels galvanischer Schwachströme.) H. Schmidt.

91. **Inflammation of the Mucosa of the Mouth.**—Williger devotes a word in passing to the amazing resisting power of the lining of the mouth, in such marked contrast to mucosa elsewhere. But when there is damage from a broken tooth or general febrile disease, the secondary stomatitis that may develop is depressing and measures to cure it are imperatively needed and give great relief. Even when there is no actual inflammation, proper care of the mouth may ward off secondary parotitis, besides its effect on the appetite and spirits. Not only the teeth, but the gums and tongue must be wiped off with the finger wrapped in a thin layer of cotton. The best way, he says, is to cut a piece about 4 by 10 cm. out of sheet cotton and then peel off a very thin layer to wrap around the finger, and dip the finger in a mouth wash. By using plenty of the fluid the mouth can be thoroughly cleansed without hurting. The patient can do this himself when perseveringly trained until he does it right. Three times a day is as often as it should be done, merely rinsing out the mouth after eating at other times. He regards it as the criterion for good nursing when the patient's mouth is found clean at the doctor's visit. With contagious diseases a wad of cotton held with forceps must be used instead of the finger. The mouth wash must be such as softens up rapidly phlegm and thick coatings, and nothing seems to be better for this than a heaping teaspoonful of sodium bicarbonate stirred into a glass of warm water, supplemented by hydrogen dioxid not stronger than a teaspoonful of the latter to a glass of warm water. Medicated chewing gum also promotes the natural self-cleansing of the mouth. He emphasizes that before beginning mercurial treatment the teeth should be put in good order and all tartar removed.

Ulcerative stomatitis he treats by swabbing with undiluted hydrogen dioxid, repeating this until the fetor has disappeared. The tartar is then removed, not too forcibly, and then the ulcerations are swabbed and rubbed quickly with an 8 per cent. solution of zinc chlorid. The patient rinses his mouth every hour with the warm, weak hydrogen dioxid solution, and cleans out the mouth besides three times a day with the cotton-wrapped finger. Then the rest of the tartar is removed and by the third day the ulcers are healing and by the end of a week the cure is complete. Instead of the zinc chlorid, a mixture may be used consisting of a little iodoform and a few drops of alcohol with enough of an 80 per cent. solution of lactic acid to make a thin paste. The tooth brush hitherto used must be burned. Aphthous stomatitis requires just the reverse—avoidance of every irritating substance, and merely warm sodium bicarbonate or boric-acid solutions to hold in the mouth for five minutes, the mouth thus rinsed out six times a day. The aphthae can be touched with 3 per cent. boric-acid glycerin; children like this. Drug stomatitis may range from simple edema to blisters and necrotic patches. It requires mild treatment.

92. **Chronic Constipation.**—Rosenfeld has been remarkably successful in curing constipation of years' standing by simple dieting and having the patient stay alone in his room for a day or two, all visitors excluded, and go frequently to the water closet, not waiting for desires. The aim is to train the patient to become aware of and heed the faintest impulses toward defecation. This will bring his bowels under his control again. The simple oatmeal, rice, cocoa and chocolate diet, no meat, butter, milk, fruit or vegetables, is kept up for three or four days. Then to this is added a little poultry or boiled ham for two days; then the same plus roast fowl for two days; then the same plus boiled cream by the tablespoonful, and the sixth menu adds boiled cream by the cupful. This diet outline is the typical antidiarrhea diet, but it seems to regulate conditions just as well in the constipated. The dieting course lasts two or three weeks, finally including cauliflower and asparagus, then spinach, potatoes and green peas, with fruit the last to be resumed.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

LXXVI, No. 2, pp. 321-676. Last indexed July 18, 1914, p. 285

94 The Innervation of the Ovaries. (Studien über die Nerven des Eierstocks mit bes. Berücksichtigung der interstitiellen Drüse.) J. Wallart.
95 *Umbilical and Postoperative Hernia. (Die Operation von Nabel- und Bauchnarbenbrüchen mit querer Fascienspaltung und Muskelaushülsung.) A. Schottelius.
96 *Ligation of Vena Cava in Puerperal Pyemia. F. Fromme.
97 Extra-Uterine Pregnancy at Term; Fetus Long Dead. P. Werner.
98 Myomas of Cervix of the Uterus. B. Novogrodsky.
99 *Functional Disturbances in Female Genitals and Disturbances in Vegetative Nervous System. E. Mosbacher.
100 Capacity of Women for Lactation. (Zur Frage der Stillfähigkeit.) G. Krosz.
101 Anaphylaxis in Relation to Pregnancy. M. Bolaffio.
102 *Early Diagnosis of Pregnancy by the Proteolytic Ferment in the Serum. (Zur Schwangerschafts-Diagnose mittels des Antitrypsinverfahrens.) S. Adachi.
103 *Behavior of the Proteolytic Ferments of the Leukocytes in Pregnancy, in Puerperal Fever and with Tumors of Female Genital Organs. G. Lohmeyer.
104 Determination of Sex of Fetus. (Ueber Geschlechtsbestimmung beim Menschen.) H. Poll. (Das konstitutionelle Moment beim Geschlechtsproblem.) Kuntzsch.

95. **Treatment of Umbilical and Postoperative Hernia.**—Schottelius has applied the *Menge-Pfannenstiel* technic in 11 cases, as he describes in detail, with illustrations. The

special features of it are the transverse section of the fascia and the freeing of the muscle until it is mobilized enough to suture the lips together. Favorable results with it are being reported from various quarters. Menge has applied it in 75 cases with no fatalities since the very first, when he lost three patients. Recurrence has never yet been observed. Schottelius' last patient succumbed soon after the operation to pneumonia and heart weakness. There was no actual hernia in this case, but the rectus muscles gaped far apart and the huge pendulous abdomen between caused intense discomfort. The reduction of the abdominal contents was a difficult matter, and this crowding of the bowel back inside evidently contributed to the fatal outcome. The case teaches the necessity for a preliminary systematic effort to reduce the abdominal content and accustom the heart and lungs to the altered conditions of pressure before attempting the operation on the abdominal wall.

96. **Ligation of Vena Cava with Puerperal Pyemia.**—In the case reported by Fromme a woman of 24 aborted at the third month of her second pregnancy. After the uterus had been cleared out, febrile puerperal endometritis followed for nearly two weeks and then came four afebrile days. Thrombosis in the right pelvic vessels then developed, with thirty-eight chills during the nearly three weeks of this phase. The vena cava was then ligated, and there were no further chills for nine days although the patient had developed pneumonia. Then came a new pyemic phase with twenty-one chills, with death the third week. Necropsy disclosed that if, besides the vena cava, the sound common iliac vein had had a ligature thrown around it too, just before it entered the vena cava, this would certainly have shut off the region of the thrombosis from the rest of the circulation. The thrombosis had involved the common iliac vein although it was evidently sound at the time the vena cava had been ligated. The case demonstrates the feasibility of ligating the vena cava, and that it is a comparatively simple operation.

99. **Functional Gynecologic Disturbances.**—Mosbacher tabulates under nine headings the details of ninety cases of various disturbances in the genital sphere, all of purely nervous origin. He classifies them in seven groups, those with pure painful menstruation, those with leukorrhea with or without dysmenorrhea, those with nervous exhaustion or neuralgia or smarting at micturition, tenesmus or sacral pain, four cases of amenorrhea, six of climacteric disturbance, and twenty-five of merely functional uterine hemorrhage. All organic causes had been painstakingly excluded. All the patients exhibited numerous signs of abnormal excitability on the part of the vagus or sympathetic nervous system. Most of them presented an intense reaction to subcutaneous injection of 1 c.c. of 1 per cent. pilocarpin, and only comparatively few developed glycosuria under the influence of 1 c.c. of 1 to 1,000 epinephrin. The patients further all had their vitality depressed by sorrow or worry—in some cases dread of a pregnancy—or they were women inclined to psychoneuroses.

102. **Early Diagnosis of Pregnancy by the Antitrypsin Test.**—Adachi obtained a positive response with 97 per cent. of the thirty pregnant women examined. He used Rosenthal's method of "antitrypsin titration."

103. **The Proteolytic Ferment Test of Pregnancy and Gynecologic Disease.**—Lohmeyer's tests for the proteolytic ferment confirmed its constant presence in pregnancy and for two weeks after delivery. The proteolytic power of the leukocyte ferment is increased in all febrile conditions and also with cancer, tuberculosis, and suppurative processes of all kinds. Positive findings are the digesting of the culture medium on a Löffler plate when droplets of blood are placed on the plate. The resulting dimples in the Löffler plate coating demonstrate the activity of the proteolytic ferment, according to Müller and Jochmann who introduced this test.

Zentralblatt für Gynäkologie, Leipzig

December 5, XXXVIII, No. 49, pp. 1465-1480

105 *Retention of Scraps of the Placenta. (Behandlung retinierter Placentarreste.) O. Hoehne.

105. **Retention of Scraps of Placenta.**—Hoehne relates 29 cases of this kind from the Kiel clinic in the last seventeen years, the delivery at term. In 6 the gap in the placenta was recognized at once, and the part left behind was immediately extracted. The hemorrhage was promptly arrested and the involution of the uterus proceeded normally. In 8 other cases the placenta seemed to be whole although part had been retained. It was expelled spontaneously in 3 cases within eleven days, with transient fever in 2. In 5 cases continuous or sudden hemorrhage attracted attention to the retained scrap, within one to nearly eleven weeks after delivery. Febrile endometritis followed in only one case. Of the 15 women brought to the hospital not until after delivery, 7 with retained scraps had fever and one thrombosis. Two died in this group. These experiences emphasize anew, he reiterates, the importance of detecting any defect in the placenta and the necessity for extraction at once after delivery of any scraps that may be retained.

If the placenta seems complete, any unusual loss of blood, with delay in involution or gaping cervix, should warn of a retained scrap and call for immediate clearing out of the uterus. When fever is already installed, he advises to wait unless there is much bleeding. The waiting time can be utilized for bacteriologic control; the greater the virulence of the germs found, the more necessity for caution and conservative measures. If active treatment is indispensable, sharp instruments should not be used but the uterus should be thoroughly cleared out. Fever, fetid lochia and defective involution alone are never an indication for digital examination of the puerperal uterus; only a profuse hemorrhage calls for this. If the puerperal infection has spread beyond the uterus and there are profuse hemorrhages, it might be better to consider removal of the entire uterus, with or without ligation of veins, protecting the peritoneum by preliminary stimulation before the operation.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 6, XXXV, No. 132, pp. 2037-2052

106 Aleukemic Myelosis from Clinical Standpoint. G. Ghedini.
107 Apparatus for Study of the Hearing Capacity. (Nuovo sonometro per lo studio di fenomeni acustici.) S. Salaghi.

December 10, No. 133, pp. 2053-2068

108 *The Urochromogen Reaction in the Urine. (Sul valore semeiologico del permanganato di potassio nelle orine—Reazione di Moritz Weisz.) A. Balduzzi and A. Ballero.

December 13, No. 134, pp. 2069-2084

109 Sterility in Women. L. Dozzi.
110 Alcoholic Extract of Beef Tonsils Alleged Superior Antigen for the Wassermann Reaction. A. Vattuone.

108. **The Urochromogen Reaction.**—Balduzzi and Ballero report considerable research with the Moritz Weisz potassium permanganate test applied to the urine. They obtained a positive reaction in 23 and a negative in 100 examinations of the urine of 113 scrofulous children, the sexes about equally divided. The reaction was positive in 10 tuberculous adults, but it was also positive in 25 of 43 non-tuberculous affections including cases of echinococcus or pneumococcus disease, cholelithiasis, acute articular rheumatism, malaria and Malta fever. The reaction is thus not restricted to tuberculosis. They explain it as due to albuminoid putrefaction with elimination of the products oxidized from the indican generated wherever there is putrefaction of albuminoids. This assumption explains the apparently capricious occurrence of the reaction; it is positive when there is fever or the oxidation processes are increased from any cause. It is thus of frequent occurrence in tuberculosis while it is absent in the healthy and with torpid lesions. The test is merely the addition of three drops of a 1 per thousand solution of potassium permanganate to one of two test-tubes, both half full of a mixture of urine with two parts of water. If the reaction is negative, there is no appreciable change in tint. With a positive reaction, the fluid turns a distinct yellow. With a negative response he repeats the test with urine diluted one-half with water. A persisting pronounced reaction is an unfavorable sign. The alternation of positive to negative responses corresponds to phases of improvement and aggravation in the clinical condition, especially with pulmonary tuberculosis.

Policlinico, Rome

December 6, XXI, No. 49, pp. 1705-1740

111 *Familial Tuberculous Laryngitis. G. Bilancioni.

December 13, No. 50, pp. 1741-1776

112 *Enlargement of the Stomach as Early Sign of Ileus. (Di un sintoma importante—gastroectasia—per la diagnosi precoce dell'occlusione intestinale.) P. Cataldi.
113 *Means to Influence Growth and Function of the Thymus. (Nuovo metodo per lo studio dell'evoluzione e delle funzioni del timo.) G. Sabatini.

November, Surgical Section, No. 11, pp. 509-556

114 *Tuberculosis of the Kidney; Seven Cases. P. Marogna.
115 *Filling Operations. (Di una eccezionale indicazione alla impiombatura per la guarigione di una lesione suppurativa della tiroide e dell'uso della impiombatura nella moderna chirurgia.) I. Scalone. *Commenced in No. 9.*
116 Fever After Ovariectomy. P. Azara.
117 Adenomas of the Sweat Glands. (Adenomi delle ghiandole sudoripare.) G. Frattin.

111. **Familial Laryngeal Tuberculosis.**—Bilancioni has noticed that certain families seem to display a special susceptibility to tuberculosis and, in particular, that certain organs seem to be predominantly affected in certain families. This special topography of tuberculosis in such families may be due to inherited characteristics or to the special environment in the family. He relates the details of three families in which two brothers or two sisters presented tuberculous laryngitis as the earliest and in one instance long the exclusive clinical manifestation of tuberculosis. The patients were 21 and 23, 9 and 11. In the third family two brothers and the son of one all had pulmonary tuberculosis accompanied by lesions in the larynx so severe that the father and son soon died from inanition owing to the progress of the throat trouble.

112. **Enlargement of Stomach as Early Sign of Ileus.**—It is not always that a case of ileus presents the four unmistakable symptoms of obstruction of the intestines, namely, abdominal pain, tympany, fecaloid vomiting and complete retention of feces and flatus. Before all of these are apparent it may be possible to diagnose the ileus by merely the abdominal pain and tympany, vomiting, small and rapid pulse and pronounced dilatation of the stomach. The acceleration of the pulse may be the result of reflex action from irritation of the abdominal sympathetic. This may also be the explanation of the dilatation of the stomach which occurs early in such cases and which is of great differential importance. He describes in detail four cases in which this gastrectasia was the only symptom which seemed to exclude other affections and pointed to ileus as the cause of the disturbances noted. The patients were adults between 33 and 58, and the large stomach protruded as the patients reclined. In some of the cases the bowels had moved up to twenty-four hours previously, and appendicitis seemed more probable than ileus, but the course of each case confirmed the reliability of the gastrectasia as a sign of ileus.

113. **Means to Influence Growth and Functioning of the Thymus.**—Sabatini reviews some recent research by Fiore and Franchetti in which they apparently have demonstrated that it is possible to accelerate the involution of the thymus by injecting serum from adults of the same species, and also to accelerate the growth and postpone involution by injecting the serum from young of the same species. The adult serum, they argued, must contain substances favoring involution, while the serum from the immature must contain substances with the opposite action, and their experiments on laboratory animals apparently confirmed this view.

114. **Tuberculosis of the Kidney.**—Marogna's patients were between 20 and 36 except one man of 46. There were evidences of some focus elsewhere in every case. Unduly frequent passage of urine at night was the first and most constant symptom in all, long preceding any sensation of pain. The pollakiuria developed into incontinence in some of the cases, both at first only at night, and later also during the day. There was slight hematuria in only three cases. The symptoms from the secondary cystitis were what brought the patients to the doctor at first. The history of some of these cases shows anew how practitioners are too apt to regard the cystitis as the primary, or at least the main trouble, and overlook the kidney affection.

115. **Cavity in Thyroid Plugged with Iodoform Filling.**—Scalone's patient was a woman of 56 who had had the thyroid enlarge at times during her earlier pregnancies but it always returned to normal size afterward. At about the age of 50, during convalescence from typhoid, there was extensive suppuration in the thyroid and a fistula was left which refused to heal and caused great discomfort. After six years of this, Scalone operated on the still discharging fistula and found that it led into a large cavity with calcified walls. Attempts to clear away the lime deposits caused such pain and disturbance in neighboring organs that they had to be abandoned. After sterilizing the cavity with iodin, he injected about 25 c.c. of the Mosetig iodoform filling, and sutured the mobilized skin to cover the opening. At first some scraps of the filling were cast off, but then everything healed smoothly and the patient was cured of all trouble from this source. In connection with this case he reviews the literature on the subject of iodoform fillings, paraffin fillings, Beck's bismuth paste, and adipose tissue used as filling for cavities in bones and to compress the lung (Tuffier's extrapleural filling), quoting the details of about thirty-five cases in which these various technics have been applied.

Riforma Medica, Naples

November 28, XXX, No. 48, pp. 1317-1344

118 Action of Colloidal Manganese on the Resisting Powers. (L'azione dell' ossidasolo sui poteri di resistenza dell' organismo.) L. Ferrannini. Commenced in No. 47.
119 **Pathogenesis of Leukemia. C. Martelli. Commenced in No. 47.*

December 5, No. 49, pp. 1345-1372

120 Direct Action of Nicotin and Tobacco on Motor Functioning and Tonicity of the Intestines. E. Tedeschi.
121 *Failure of Attempts to Induce Experimental Proteus Osteomyelitis.* G. Marsiglia.
122 Pathogenesis of Hysteria. (L'isterismo.) A. Salmon.

December 12, No. 50, pp. 1373-1400

123 **Indications for Artificial Pneumothorax from New Standpoint.* P. E. Livierato.
124 Pathogenesis of Tetany of Parathyroid Origin in Children. A. Pepere.
125 Nitrogen Has Special Action of Its Own in Artificial Pneumothorax. (Sullo speciale meccanismo d'azione dell'azoto nel pneumotorace artificiale.) A. Cantani and G. Arena.

119. **Leukemia.**—Martelli records the details of twelve cases of leukemic myelosis, five of leukemic lymphosis, two of leukanemia and five of what he calls preleukemia, comparing the findings and previous history. He inoculated numbers of laboratory animals with blood and tissues from the patients but never succeeded in reproducing any affection resembling the original leukemia, etc. These negative results and the fact that contagion is not known or any focus where the disease is prevalent, all speak against the assumption of a specific germ for it. On the other hand, in nearly every one of his cases there was a history of some preceding infection or the patient was in a septicemic condition. Tuberculosis, syphilis, malaria, streptococcus or staphylococcus affections were known in most of the cases. There was also a predisposition evident in most, manifested by adenoids, unstable nervous system, or defective development. An additional factor was evident in some cases from a trauma, overfrequent pregnancies, etc. An ordinary toxic infectious affection occurring in the predisposed may lead to the changes characteristic of leukemia. Treatment and prevention should aim to restore normal conditions throughout, and thus counteract the tendency to abnormal metaplasia of the tissues involved. Benzol and Roentgen treatment do not act on the cause.

123. **Indications for Artificial Pneumothorax from New Standpoint.**—Livierato cites numerous instances of benefit from bilateral pneumothorax even when the lungs were compressed very slightly and the intrathoracic pressure was persistently negative. Analysis of these cases shows that the benefit must have been from the interruption of the lymph current from the lungs to the pleura, thus cutting off the passage of toxic substances from the lungs into the blood. Still another factor in the benefit is the resulting damming up of the lymph in the lung which causes a number of biologic and pathologic-anatomic changes. From this point of view, artificial pneumothorax need not be restricted to uni-

lateral cases nor to foci with cavities. It offers a chance to benefit even the extensive cases, involving both lungs, if the affection is not very intense or destructive. The aim in such cases is not to compress and cause the collapse of the lung, but merely to interpose a layer of gas between the sheets of the pleura and interrupt the circulation of lymph and dam it up in the lung. The lymph thus backing up in the lung acts by a kind of autoserotherapy, modifying the virulence of the germs or at least rendering the environment less favorable for their development. The damming up of pus and other toxic substances aids in this, and the fact that these substances are thus kept out of the blood explains the subsidence of the symptoms of the toxemia. The procedure has been extensively applied in this way in his service at Genoa, and the results have been encouraging, but the interval since has not been long enough for a decisive judgment.

Brazil-Medico, Rio de Janeiro

October 22, XXVIII, No. 40, pp. 373-380

126 Mycosis of the Lungs Caused by Oidium brasiliense. II. O. Magalhães.
127 Experimental Infection with the Protozoon, "Toxoplasma." II. J. B. Arantes.

November 8, No. 42, pp. 389-396

128 *Improved Electric Treatment of Aneurysms. (Sobre uma modificação do chamado methodo brazileiro de tratamento das aortasias.) P. Valladares.
129 False Tabes Dorsalis of Malarial Origin. A. A. Da Matta. Commenced in No. 41. Concluded in No. 44.
130 Color Test for Syphilis. (Reação de Landau; Novo meio de diagnosticar a syphilis.) G. A. Correa.

November 15, No. 43, pp. 397-404

131 *Case of Apoplectiform Myelitis. A. Britto.

128. **Electric Treatment of Aneurysms.**—Valladares has somewhat modified the so-called Brazilian method of treating aneurysms by application of the positive pole of a continuous or galvanic current. Instead of relying exclusively on the coagulating action of the positive pole, he enhances the action of the electricity by magnifying the interpolar transcutaneous voltaisation, as he calls it. Both electrodes should be of the same size and as large as the aneurysm to be treated. The electrodes can be changed about so that the skin does not suffer at any point from too long application. As the electrodes are of equal size, this permits the use of stronger currents. Electric treatment of aneurysms is regarded as a triumph of Brazilian medicine, and it is hoped that this modification of it will deprive it of all its previous drawbacks.

131. **Apoplectiform Myelitis.**—In Britto's case a man of 50 with a history of syphilis began to experience pain in the spine and after a few days there was sudden and total paralysis of the legs but no flaccid paralysis. The spine was painted with tincture of iodin, while vigorous mercurial treatment was instituted and by the fifth day the man was taking a few steps and soon was able to return to business.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 6, pp. 381-428

132 Life Prolonged by Intratracheal Insufflation in a Case of Cerebellar Tumor. A. A. H. van der Bergh and E. D. Wiersma.
133 Intravenous Injection of Concentrated Solutions of Neosalvarsan. J. van Assen.

No. 7, pp. 429-476

134 *The Skin Tuberculin Reaction with Human and with *Bovine* Tuberculin. C. de Lange.

No. 8, pp. 477-524

135 Chronic Cystic Mastitis. E. H. van Lier.

No. 9, pp. 525-588

136 Salvarsan in Treatment of Syphilis. A. H. M. E. Lommen. Concluded in No. 10.
137 Cystic Tumors of the Frontal Lobes; Four Cases. (Cystomen der voorhoofdshersenen.) G. C. Bolten.

134. **Skin Tuberculin Reaction with Human and Bovine Tuberculin.**—De Lange reviews the more important literature on this subject and reports her own experience in 150 cases. She thinks that only by combining the two tests do we get a reliable insight into conditions in children. Her experience at the large Emma Children's Sanatorium indicates further that pulmonary tuberculosis is not so prevalent among children as many imagine. Numbers of cases diagnosed as such are in reality cases of chronic pneumococcus infection, and it is cases of this kind that form the majority of those in which the children recover when living an out-of-door life. The course of chronic pneumococcus infection of this kind is generally favorable in the long run, except as it may render the children more susceptible to tuberculosis. (Another article on comparative human and bovine tuberculin tests was reviewed in these columns June 13, 1914, p. 1932.)

Russky Vratch, Petrograd

July 18, XIII, No. 27, pp. 933-964

138 Pasteur Treatment in Epilepsy; Benefit in Four Cases. M. P. Nikitin.
139 Torsion of the Pedicle of the Floating Spleen. I. T. Kozloff. Commenced in No. 24.
140 *Comparison of Various Methods of Staining the Treponema Pallidum. N. I. Drosdova.
141 Post-Mortem Findings in Adult Dwarf. M. S. Davidoff.
142 *Stab Wound of Pregnant Uterus. V. L. Brown.

140. **Staining Technic for the *Treponema Pallidum*.**—Drosdova has been testing and comparing eighteen different methods of staining spirochetes. In her judgment, the Giemsa two-minute stain and Reitman's method, slightly modified, are superior to all others. With the latter, after fixation for ten minutes in absolute alcohol, the specimen is acted on by 2 per cent. phosphotungstic acid for two minutes. This is then washed off with water and alcohol, as with the original Reitman method.

142. **Stab Wound of Pregnant Uterus.**—In Brown's case the *nine-months pregnant* uterus had been stabbed with a knife. The wound was two inches wide, and through it the membranes of the fetus could be seen. Brown decided to abstain from cesarean section and closed up the wound with interrupted silk sutures. In spite of the fact that six hours later labor began, with delivery in five hours, there were no complications on the part of the uterus and the patient was discharged eleven days later in perfect condition.

Hospitalstidende, Copenhagen

December 9, LVII, No. 49, pp. 1441-1464

143 *Recovery After Removal of Spinal-Cord Tumor. (Et Tilfælde af Rygmarvstumor med Operation.) H. Lind and I. Svindt.

December 16, No. 50, pp. 1465-1488

144 *Solitary Blood Cyst in the Kidney with Hematuria. (Om solitære Blodcyster i Nyrerne med Hæmaturi.) O. Wulff.

143. **Spinal Cord Tumor.**—The patient was a man of 66 previously healthy except for three attacks of acute articular rheumatism. In September, 1913, he began to experience severe pain radiating into the left side from the spine, and his legs gave way under him and there was a little incontinence of the sphincters. By the fifth month he was unable to move his legs; the tendon reflexes were exaggerated and there was some contracture, but the spine was not tender. Lumbar puncture showed considerable pressure, opalescence and positive Nonne-Apelt in the fluid, but no lymphocytosis, and there was no sensation below the umbilicus. The dura was opened and an ovoid fibro-endothelioma an inch long was found on the right side at the eighth and ninth dorsal vertebral arches. It was adherent to both cord and dura, but the cord seemed normal otherwise except for being compressed, and the man's recovery since the tumor was shelled out has been remarkable. He walks with a cane but can go up and down stairs. The cicatrix is not tender, there is no paresthesia in the feet, and sphincter functioning is normal.

144. **Solitary Blood Cyst in the Kidney with Hematuria.**—Two men, 32 and 34, noticed blood in the urine, but there were no pains and no disturbances in urination. The hematuria kept up profuse for a week although the men stayed in bed. They felt somewhat weak but nothing objective could be found to explain the hematuria. One of the men had had gonorrhea eight years before. The other had no morbid antecedents except pneumonia at 11 and 23. The blood came from the right kidney in both cases, and on suspicion of malignant disease the kidney was removed in each. Even after the kidney had been exposed it was impossible to

exclude cancer, and consequently the organ was removed. In both cases the trouble was found to be a single benign cyst filled with blood. There are only a little over sixty cases of a solitary cyst in the kidney on record, and only fourteen in which the cysts contained blood, and of these only a few were accompanied by hematuria. Most of the cases of solitary kidney cysts were in children. This renders the more remarkable the fact that Wulff's two cases were in young men and were encountered within four months of each other. The hematuria also was much more severe than in other cases on record, compelling early operative treatment to save the men's lives. In both cases the cyst was in the upper pole of the kidney and the size of a walnut. It lay so deep that resection was out of the question.

Hygiea, Stockholm

LXXVI, No. 21, pp. 1201-1248

145 *Hernia, Industrial Accidents and Workmen's Compensation. (Om bråck och olycksfall.) J. Akerman.

146 Experimental Research on Heat Puncture. (Värmesticket.) G. Liljestrand.

No. 22, pp. 1249-1311

147 Mental Disease and Internal Secretion. (Sinnessjukdomarna och den inre sekretionen.) B. Gadelius.

145. **Hernia and Workmen's Compensation.**—The companies in Sweden insuring against accidents have been distributing since 1908 a question-blank to physicians to be filled out for each case of hernia claimed to be the result of an industrial or other accident. The question-blank states that 5 kronor, a little over a dollar, will be paid for each blank authentically filled out and received by the central office, a cheque to be sent each quarter to the physicians who have thus contributed. The question blank is reproduced here; there are about seventeen questions to be answered. Akerman states that about 170 workmen applied to the authorities for compensation for hernia, which they claimed was the result of an industrial accident, during the last six years. Their application was rejected in 56 cases; 80 were given free operative treatment and sickness indemnity; 26 were awarded compensation for disability, but only 8 were indemnified for permanent disability. During this period about 600,000 workmen were insured, and about 25,000 operations for hernia were performed in the public hospitals in the country.

The data collected, and increasing experience have demonstrated that hernia is of three types, the first of which is hernia from direct violence. This is so rare as scarcely to be taken into account. The second type is hernia from strain, the typical traumatic industrial hernia; the third type is constitutional hernia, a slowly developing and late appearing deformity; he calls this "hernia malady." He declares that it is impossible to decide, without an operation, to which of these groups the hernia belongs. Hence he urges great liberality in respect to the expense of an operation. If the hernia is of the first type, workmen's compensation should always be granted, but not if it is of the third type, the "hernia malady." Among the hernias of the second type, some will be found conferring permanent disability for which the industrial accident was responsible, but the majority will show conditions which exonerate the accident. When an indemnity was allowed, it ranged from 10 to 20 per cent. of the previous wages, an average of 15 per cent. Akerman's own view is that great reserve is necessary in awarding indemnities for permanent disability from hernia, but that, on the other hand, means should be provided generously for operative treatment in all cases, even if it proves merely an exploratory operation.

Ugeskrift for Læger, Copenhagen

November 26, LXXVI, No. 48, pp. 2039-2068

148 Plague in Denmark About 1600. (Johan Warwichs danske Pestbog.) J. W. S. Johnsson.

149 Tuberculous Children and the School. (Om Undervisning af tuberkuløse Born.) K. Lundh.

December 3, No. 49, pp. 2069-2116

150 Internal Secretion During Pregnancy. (Den interne Sekretion Under Svangerskabet.) S. A. Gammeltoft.

151 Familial Hemophilia. A. Arnold-Larsen.

Upsala Läkareförenings Förhandlingar

September, XIX, No. 4, pp. 217-279. Last indexed May 2, 1914, p. 1444

152 Occurrence of Bromin, in Organic Compounds, Through the Animal Kingdom. (Om förekomsten af brom, i organisk bindning, inom djurvärlden.) C. T. Mörner.

153 Research on Parthogenesis in Vertebrates. (Några nyare undersökningar öfver partenogenetisk utveckling af ägg från ryggradsdjur.) E. L. Backman.

154 Passage of Alcohol into the Urine. (Om alkoholens öfvergång i urinen.) (Om en enkel, kliniskt användbar metod for diagnosticering af alkoholförekomst i kroppen.) E. M. P. Widmark.

155 Visual Fixation of Moving Object. (Försök att bestämma noggrannheten af vår fixation af rörliga föremål.) P. T. Bjorck.

December, Nos. 1-2, pp. 1-123

156 *Calcium Treatment of Glandular Tuberculosis. (Några röntgenologiska och kliniska iakttagelser vid kalkbehandling af bronkialkörteltuberkulose.) A. Wersen.

157 *Cysts in the Bladder. (Zysten in der Harnblase.) Ekehorn.

158 Importance for Vision of Indirect Seeing. (Om blickrörelsen och det indirekta seendets betydelse för blickningen.) C. G. Sundberg.

159 *Importance* of Hypotonic Medium for Respiration of Oxygen by Marine Animals. (Om det hypotoniska mediets inverkan på Selachiernas syrgasandning.) E. L. Backman.

160 Means to Estimate Size of Cortex and Medulla of the Thymus, and Number of Hassall's Bodies. (Methode, die Menge der Rinde und des Marks der Thymus sowie die Anzahl und Grösse der Hassallchen Körper zahlenmässig festzustellen.) J. A. Hammar.

156. **Lime in Treatment of Tuberculous Bronchial Glands.**—Wersen administered calcium lactate systematically to twenty children with tuberculous processes in the bronchial glands and examined them repeatedly with the Roentgen rays, as also twenty other children with approximately the same findings in the bronchial glands, but who were not given lime in any form. About 6 to 12 gm. of the calcium lactate were given during the day for two months and the glands showed calcification in 8 cases and possibly also in 4 more, while the control cases examined over a period of seven months showed evidences of calcification in only 1 and possibly in a second case. The shadow of the hilus became more distinct also in 12 of the lime-treated children and possibly in an additional 2, while among the control children this occurred in only 2 instances. This clearing up of the shadow may be the result of healing of the tuberculous process or possibly of the direct action of the lime on inflammatory changes in the hilus. The clinical symptoms also improved materially in the lime-treated children and none seemed to have been injured in any way by these large doses of lime. It seemed to act just as well alone as when combined with cod liver oil or sodium tartrate, as was done in some cases. In 2 long febrile cases, the fever subsided almost at once after the lime treatment had been started, without any other change in the treatment.

157. **Bladder Cyst Preventing Voiding of Bladder.**—Ekehorn relates the case of a farmer of 54 who entered the hospital on account of complete retention of urine. The case seemed to be of the ordinary type of prostatic retention, although the prostate was not palpable, and the bladder was opened by a suprapubic incision. No attempt at cystoscopy had been made, as no difficulty had been experienced with catheterization. On opening the bladder the whole trouble was found to be a small, round tumor on a long stem, growing near the mouth of the urethra. This tumor had dropped into the funnel opening of the urethra and thus obstructed it like a ball valve. It was easily pushed aside by the tip of the catheter and consequently offered no obstacle to catheterization. It was then learned that the man had been in the hospital for the same trouble twice before, in 1910 and 1911. Each time the retention came suddenly and for four days the man was unable to emit a drop of urine although catheterization proceeded without difficulty. Then the ability to void the urine returned as suddenly and as completely as before, and there was no further disturbance for another year. The cyst must have been burst by the catheter; as soon as it collapsed there was no further obstruction until the cyst grew again and again started its valve action. The urine at all times had been normal and there were no evidences of cystitis. Ekehorn compares with this the cases of bladder cysts on record. In one case the pedicle was so long that the cyst appeared in the vulva of the little girl.

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SOCIAL INSURANCE AND THE MEDICAL PROFESSION *

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It is seldom that I have accepted an invitation to speak on social insurance with such enthusiasm and alacrity as the one that came from your committee. For over ten years I have devoted my leisure hours to propaganda in favor of social insurance measures in this country, and I look with a great deal of satisfaction to the change of public attitude toward what when my studies began was considered an idle dream or a revolutionary measure, but has now reached the dignity of an immediate program for most progressive organizations. During all these years it has been my hope that the interest and enthusiasm of the medical profession might eventually be enlisted in the cause. It is not only because I am the proud possessor of a medical diploma, although its use has long been discarded, but mainly because of a deep-seated conviction that there is no other class in this country which might contribute so much to the sound development of social insurance as the medical profession. Unfortunately, the practice of medicine is so exacting that the busy practitioner finds but little time to devote to the study of social problems. In the initial stages of the development of social insurance the medical profession did not play any significant part. But the fact that inquiries are beginning to come in represents a very hopeful sign of the times, even if it be true that those inquiries have been largely started by the economic effects of social insurance measures on the physician's own well-being.

Within the limited time at my disposal it would be unwise to try to present the economic theories which underlie the modern movement for social insurance, but its social significance can be made plain in a few words. Its purpose is no less than abolition of destitution in modern society, not at some distant future, but under the very conditions in which we live at present. It is but a large part of the broad world movement for conservation of human health and happiness, for which the medical profession has done so much in the past and will do so much more in the future.

That the insurance method is well adapted to prevent human distress resulting from certain unfortunate occurrences is an idea quite familiar to the American public. Life insurance has done a great deal to mitigate economic results of death of the bread-winner in the middle classes, and fire insurance has almost abolished that vast amount of human suffering which conflagrations cause, especially to society of lower economic levels. But the greatest amount of human destitution, with which perhaps no other group of people is so familiar as the ordinary every-day practitioner of medicine, is not caused by fire and not even by normal death. Physicians need not be told what the usual causes of human destitution are. They meet them in their every-day experience of visits to the homes of working men and women: widowhood and orphanage on account of premature death resulting either from accident or disease; enforced idleness due to acute diseases or lingering chronic ailments, or permanent deterioration of physical vigor due to old age, and finally all those economic disturbances of our social fabric which make it impossible even for the perfectly healthy and able man to obtain a purchaser for his labor. These are the complaints that must necessarily reach you day in and day out, and all of them are conditions in which you must be interested not only as citizens but also and very largely as members of the medical profession.

Without reading any sentimental descriptions of how the other half lives, the average physician knows that the standard of the wageworker's family is often on the margin of poverty; that the surplus in the weekly or annual balance sheet is but a rare exception and is very readily absorbed by the very first emergency arising from any cause. Without taking any courses of study on labor problems, physicians know that the housing conditions and the working conditions are in most cases unsatisfactory and present predisposing factors toward poor health with all its resulting economic effects; that in the vast majority of families their savings, if any, are so small that the first case of lingering illness or unemployment may bring even a seemingly prosperous family on the verge of destitution. In short, the pressure of the high cost of living on one side and the natural, inevitable desire for a higher standard on the other have destroyed any substantial margin between the workman's income and outgo. The resulting economic equilibrum is so unstable that any unexpected happening may throw any workingman's family below the poverty line.

NATURE OF SOCIAL INSURANCE

Social insurance as it has developed throughout the civilized world within the last three decades is an organized movement to prevent the destruction of wage-working families as consuming units by any of the ordinary emergencies of modern day existence. It recognizes that through the method of insurance, or the method of distribution of individual losses through larger numbers of individuals, the effect of such acci-

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* Address delivered before the Associated Physicians of Long Island at Long Beach, L. I., Oct. 31, 1914.

dental occurrences may be very largely alleviated. As fire insurance, by dividing the loss from fire among thousands of its insured, may prevent any one of them from becoming impoverished, so accident insurance may help those who suffer from industrial accidents, and sickness insurance may take care of families afflicted by chronic or acute illness.

So far the theory of social insurance does not by one iota differ from the general scientific principles of insurance as a whole. The one substantial difference is the recognition that the importance of some sort of provision is very much greater when we are dealing with the masses of wage-workers, that insurance here ceases to be a matter of individual concern and becomes the concern of organized society or the state. Whether or not all the handsome suburban homes of Garden City or Long Beach are to be insured against fire may be something for the individual owners of those homes to decide for themselves. We know quite well that ownership of valuable property carries with it the necessary recognition of the advantages of security and insurance as well as the ability to pay for such security. I take it that the burning of a private mansion does not represent a serious social problem beyond the individual suffering that its owners might be subjected to. But whether the millions of wage workers in this country are or are not to be insured against consequences of industrial accidents or occupational disease is a matter of the gravest importance to society at large.

The millions of wage-workers are often unwilling and still more frequently unable to bear even the distributed alleviated burden which insurance represents. Social insurance, therefore, means a good deal more than simply social concern in popularizing the insurance methods created by independent effort. It means the establishment of national or public institutions to help and encourage the various forms of insurance which the workman needs for protection against the various hazards of his existence. It means even more than that. It means the willingness of the social body to assume a substantial part of the cost of insurance, to assume a part of the burden which otherwise the wage-working class must carry on its own shoulders. It frequently means that disregarding the time-honored notions of personal responsibility and freedom, the social organism may compel and enforce insurance even against the desires of the individual so that he and his family may be protected against his own poor judgment.

Briefly, this has been the theoretic basis on which social insurance has developed in this country and to a much larger extent in Europe. If you try to imagine the difference between the German or British workmen definitely protected through some system of insurance against loss from industrial accidents or disease or invalidity or old age, and the American workmen to whom any one of these dangers means total breakdown of the economic status of his family, except for industrial accidents in a few of the states during the last two or three years, you will appreciate what social insurance has accomplished in some countries and what it may accomplish in all others, and that even the higher wages of American labor do not sufficiently compensate for the absence of these systems in this country.

So much public attention has been attracted by the recent compensation movement since 1911 that perhaps few physicians have failed to learn of its existence. In Europe accident compensation has been in actual practice for the last thirty years, and it may be safely said that by this time there is no corner of the civilized world left, with the exception of possibly some twenty American states, where some system of compensation for industrial accidents has not been established. Important as this movement has been, another one of much greater interest to the medical profession is arising — that for some systematic organization of sickness insurance, of which in the very next few years undoubtedly a good deal more will be said than has been said in the past. That, too, is an accomplished fact in most of the important European countries. Germany, Austria-Hungary, Great Britain, Norway, even Russia and Servia, have had for some time national systems of compulsory sickness insurance for the wage-working classes, and in other countries in which progress perhaps has not been so great, substantial subsidies are given from the national treasury or from the municipal funds to encourage and stimulate voluntary sickness insurance among wage-workers.

In all of the countries enumerated it is an accomplished fact that not only the wage-workers themselves, but also the employers and the public at large share in the cost of curing and alleviating illness. Some countries have gone far beyond that and have established compulsory systems of insurance against old age and invalidity, while others, such as Denmark, Great Britain, and many of its colonies, have tried to meet the problem by granting gratuitous old-age pensions to persons over a certain age, in recognition both of the economic need of the superannuated men and women and the social justice of providing for persons in the declining years following a life of useful toil. The technical methods used in organizing this vast body of remedial legislation are varied and complex. Technical experts may go on discussing the details from the point of view of legislative efficiency, but experts have never created the force which must exist behind every broad social movement. In America we have made only the first few weak steps on the road toward systematic treatment of such social diseases as poverty and destitution. Important as the gathering of accurate information may be, I have always felt that the great need of the times is to create a general recognition of the serious aspects of the problem and the possibility of meeting it by appropriate means. If we can only get enough enthusiasts clamoring for social insurance, the careful experts to work out the detailed problems will not fail to appear. We have accomplished something in that we have succeeded in passing compensation acts in twenty or twenty-five states of this Union within the short period of three years, but it is necessary to remember that perhaps half of the country still remains unconverted, and that far more important than the question of accidental industrial injuries which represent a serious economic danger in only a comparatively slight number of industries, there is the entire problem of the economic losses through disease, old age and unemployment.

I have heard one of our prominent sociologists, who is also a firm adherent of the Darwinian theory, argue that the policy of social insurance as advocated by us, resulting in assistance to and preservation of the unfit, would lead to deterioration of the human race by abolishing natural selection; but what the prominent sociologist has disregarded is the enormous preventive value, the improvement of general health conditions which may be accomplished by abolishing economic want, and furthermore, that the wasteful method of natural selection of improving the race by sacrificing thousands is utterly inapplicable to present conditions of existence of the human race, which gives us scant surplus for the action of the selective process. Argue as much as we may against neo-Malthusian theories, the plain fact remains that future improvement of the race is possible only through the preservation of the individual rather than his sacrifice to the type.

WORKMEN'S COMPENSATION

The discussion until now has been rather abstract and general. It is inevitable because of the broad outlines of the subject that I am asked to treat. Coming down to the specific aspects of the movement as it is known to Americans at present, one large branch of social insurance has left the domain of theory. The accident compensation movement affects the medical profession in a great many different ways. It has created a great many different problems which many physicians are forced to face. In meeting a member of the medical profession, I quite naturally expect to have questions in regard to accident compensation thrown at me. Now, there are two ways or rather two points of view from which this question may be discussed before physicians, and these two points of view may be characterized briefly as the economic and the social ones. I am forced to state regretfully that as yet the economic problems, or rather the way in which accident compensation affects the economic interests of the physician, have been paramount. Far be it from me to deny the complete right of the medical profession to protect its economic interests, to further the economic standing of the profession or the trade. I have been too long affiliated with the labor movement of this country to deny any profession or trade the full right to aspire to a fair remuneration for its efforts. But it seems to me that nevertheless this is not or should not be the only point of view from which accident compensation should interest the medical profession; that not only as citizens should they retain a general interest in the social results of this new type of legislation; not only should they balance these social results at least to some extent against their own trade interests, but that they should go even beyond that and study and help in the solution of the social problems of compensation just because they are representing the one profession which is most capable of doing so.

In short, the relation between compensation and the physician may be studied from two points of view, first as to what the compensation has done or will do for the medical profession, and second as to what the medical profession can and will do for compensation.

ECONOMIC POINT OF VIEW

Let us begin with the first aspect of the case, the professional or trade interest, which is simpler and more easily disposed of.

Compensation has created a large additional demand for the services of the physician and surgeon. Perhaps two millions of accidents of greater or lesser severity occur annually in this country. Almost all of them require some medical or surgical aid, from first aid only to very prolonged treatment in some cases. Before the advent of compensation, comparatively few workmen could afford to command all the necessary medical aid.

As the accident meant the loss of wages, most of them were forced to crowd hospitals and dispensaries in quest of gratuitous treatment; a good many applied questionable home remedies of their own, and others went to their family physicians, swelling the percentage of uncollectable bills.

With the recognition of the employer's duty to furnish medical aid (which holds true to a greater or lesser degree in all the compensation acts, except those of Kansas and Washington, as far as I remember), all this has changed. Moreover, not only has the amount of work increased, and the amount of gratuitous work and uncollectable bills decreased, but the rate of remuneration has also materially improved.

Try as you may, it it difficult to disassociate wholly the terms of pay for medical practice from the principle of "what the traffic will bear." It is based on the elemental fact that medical aid is not a luxury but a prime necessity—all must have it and all cannot afford to pay the same or even a fair price for it. To put it bluntly, the traffic may bear a higher charge when employers, or industry, or in the final analysis the entire community has been charged with the burden.

That is what compensation has done for you, gentlemen, and being practical Americans you will admit that it is not a small matter for you. How are you going to react to these new conditions?

This new demand for your services, this new source of income, has placed new duties on you, some of a negative, and others of a more important constructive character. There is one great "don't" that must be announced emphatically, though, perhaps, it is not altogether a delicate or pleasant subject to dwell on. The physician must not make the mistake of trying to "make a good thing out of it." Because I happen to be employed by a casualty company writing compensation insurance, my statement concerning this should not be misunderstood. I beg to point to a decade of work for true standards of social insurance before I ever dreamed of any connection with the casualty business.

It is true that in the vast majority of cases your bills for treatment of injured wage-workers are paid by casualty companies, and in the remaining cases by more or less prosperous employers, that neither the casualty company nor the employers will be brought to financial ruin by an unreasonable medical bill. But the force of economic tendencies is great. The cost of medical aid, as the entire cost of compensation, is not borne by the casualty companies who must collect in premiums what they are required to pay out in losses, and who necessarily compute the entire cost of medical aid and add it on; it is not even borne by the employers who will necessarily endeavor to shift this cost on the consuming public. Not for a moment will I dispute the claim that the medical profession is entitled to a fair remuneration for the services it renders. I am not here to protect the interests of casualty companies, or even of the public or the community at large, which still continues to put a higher valuation on the services of prize fighters and baseball players than its educators or healers. But I do plead for the rule of reason in medical bills, because in the final analysis the interests of the toiling masses demand it. The provisions of American compensation laws, in regard to medical aid, are bewildering in the variety and the extent of liberality, from total denial of it in Washington and Kansas, as already stated, up to full treatment for ninety days without limit of cost, as in Wisconsin; limit two weeks in Massachusetts, to four weeks in Illinois, and so on.

In interest of proper care, all time limits are undesirable; but they have been brought about by a fear, let us hope exaggerated, of the figure to which medical bills may grow. It is the usual size of medical bills charged to casualty companies, for minor cases, which has caused very limited and unsatisfactory provisions for medical aid in several states. There can be no question that the physician is worthy of his hire, but it is also true that the injured workman is still a workman and that the standards of payment derived from practice among prosperous families, with its accompanying waste in waiting for visits, should not be applied to the treatment of injured wage-workers.

A fee schedule agreed on after proper consultation with physicians is absolutely necessary, and should receive the cordial support of the profession.

There is perhaps another "don't" of lesser importance which may be mentioned. It fortunately does not apply to the entire medical profession but only to a few on the fringe, and that is in regard to the physician's part in the development of malingery.

Even before the compensation movement had resulted in many acts in this country, the cry of malingery arose. I was not one of those who raised it. Repeatedly on the pages of the *Survey* and elsewhere I protested against the implication that the effort of society to do some modicum of justice to the injured workmen and their families would result in making the American people a people of cheats and liars. Nevertheless it is useless to deny that a certain stimulus to malingery and fraud lurks hidden in the provisions of the compensation act. It is wrong to exaggerate it, but it is equally wrong to disregard it altogether. In my own experience I have met a few cases of this kind, though not so many by far as some enemies of compensation would want us to believe. Physicians in Europe have done a good deal to call public attention to this evil; perhaps they have exaggerated its extent. In telling these often unpleasant truths the medical profession has performed a valuable public service. But it is impossible to disregard the fact that in almost all cases of flagrant malingery a share of the responsibility falls on some member of the medical profession whose crime in the worst cases, and these fortunately are few, is that of deliberate collusion and fraud, and in many cases a certain weakness and misapprehension as to the moral duties of the physician toward his patient.

Not for a moment should this sense of professional duty rise above the duty to the social organism as a whole, and surely it is not socially desirable that the tremendously important step toward constructive social policy should suffer from a charge of destroying the workingmen's sense of self-reliance and independence. Even beyond the temptation to outspoken malingery, there is the danger of encouraging the excessive neurotic diathesis.

Far more important than compensation of a week or two to the injured wage-worker is the preservation and stiffening of his moral backbone. It is the duty of the medical profession as a whole to take a very definite attitude against those few of its members who are forgetful of their social duty.

In many more cases this encouragement of exaggeration by the physician is entirely involuntary. Workman's compensation has put new requirements on the physician. In addition to the surgical and medical judgment a new economic judgment is required. The healing of the injury is often an entirely different matter from the entire restitution of earning capacity. Many years' experience with accident reports and physicians' certificates have convinced me that this economic judgment is largely lacking, and that expert medical opinion in the important problem as to the exact time of permissible return to work is often highly unsatisfactory.

As a matter of fact, the judgment is too optimistic more frequently than otherwise. In perhaps 75 per cent. of the cases the physician's estimate as to the probable duration of disability falls far short of the actual duration of disability. Compensation has done away with many legal technicalities of the liability law which were a valuable asset to hundreds of attorneys, but in its stead it has created a large demand for expert medical opinion which I fear is not as yet always met with uniform degree of success. Nor is an unbiased diagnosis and prognosis all that the physician must furnish.

The acceleration of economic recovery has acquired a definite commercial value. The work of Zander institutes in Germany is an indication of how much the medical profession can contribute to the cause of human conservation.

An indirect result of compensation is the stimulus it must give to the work of prevention, a line of endeavor largely neglected in this country until now. As far as accident prevention is concerned the field is open for the inventive genius of the American engineering profession. For many years our engineers were too busy constructing gigantic buildings and intricate machinery to pay much attention to reducing the toll in human life and limb.

Even so it has been suspected that physicians took more pride in inventing new operations, rather than in preventive work. But while the causation of industrial accidents is not within the province of medical science, there is an equally important field of inquiry in connection with industrial diseases. Already in one or two states these diseases have been included under the compensation act by judicial decisions, and thus have opened a large field for diagnosis, prognosis and prevention. But as yet the American medical profession has paid comparatively slight attention to them. The splendid work done by many physicians in the domain of industrial hygiene must not be disregarded. But it still remains true that similarly important work was done by non-medical investigators.

Compensation is to-day an accomplished fact. Only five years ago it was but a hope. To-day the first steps are taken in this country for a system of sickness insurance. I venture to make the prophecy that once started, the movement will proceed at even a greater rate of speed.

In December, 1912, the American Association for Labor Legislation, encouraged by the progress made with accident compensation, provided for a special national committee on social insurance. During the greater part of two years this committee of leading authorities on the subject has been working on a plan for compulsory health insurance in America. The work has progressed to the point where it may be confidently expected that a bill will be introduced in some of the state legislatures in 1915.

The economic ravages of industrial accidents are picturesque and attract attention, but ordinary prosaic every-day sickness presents a still greater problem. If a dollar and cents measurement is required, it is enough to point out that the cost of sickness insurance in Germany is $100,000,000 a year as against $40,000,000 spent for accident relief. On the same basis a national system of sickness insurance in this country would represent an annual amount of about $300,000,000. Of this amount, it may be confidently expected that nearly one-half will be spent for medical aid, medical supplies and hospital treatment, and yet I venture to hope that this will not be the only point of view from which the American medical profession will consider sickness insurance.

SOCIAL POINT OF VIEW

It scarcely seems worth while to argue the social significance of a comprehensive sickness insurance system to an assembly of physicians. It is not only that the medical profession knows from its own observation the amount of destitution that exists; it is not only a sentimental appeal for relief of human suffering, but it is because no one is better able to judge than is the physician what an important factor poverty represents both in causing disease and in preventing its proper treatment and cure. Whether in dispensary practice or even in the homes of the tenement population, the physician simply cannot fail to feel the entire hopelessness of medication and advice unless supported by substantial improvement in the general hygienic conditions and economic well-being of the family. One might as well try Christian Science or absent treatment as to advise good nourishment, fresh air or rest where the illness of the wage-worker also means the complete stoppage of income and perhaps an immediate dropping below the line with necessary appeals to public or private charity. No one better than the physician knows how totally unnecessary is the largest share of illness surrounding us, how easily it could be met by proper conditions of living or working, and what a depressing effect these conditions must have on the development of the human race. Sickness and poverty stand in a relation of a vicious circle to each other; sickness causes poverty through the interruption of income, and the cost of medical treatment. Poverty causes sickness through lack of good food, good lodgings, through ignorance and neglect of personal hygiene, through destruction of mental rest. Only with the help of a strong shears can this circle be cut, and of its two blades, one spells sufficient medical aid, and the other necessary economic assistance.

I shall not venture to make any guesses as to which of the two blades is of greater importance. Affluence alone will not cure pneumonia or an ingrown toe-nail, but no one better than the attending physician knows the utter futility of drugging the sick man when other conditions are unfavorable.

If the medical profession is at all conscious of its social function, its unqualified support of the comprehensive plans for sickness insurance should be a matter of course. Experience has shown, however, that this has not always been its attitude in the matter. American physicians have heard of the attitude of the British medical profession during the introduction of the British national health insurance act (perhaps the greatest piece of constructive social legislation that Great Britain has passed as yet), and of the constant quarrels between the German physicians and their sick-insurance funds.

So far as the arguments between the British medical profession and Lloyd-George concerned the financial terms for rendering medical service, or the strikes of the German physicians aimed at exacting a somewhat higher rate of pay, I will cheerfully admit that the views of the physicians deserve a hearing. After twenty years' active participation in the labor movement, I am not here to deny to any trade or profession the right of organized effort to improve conditions of employment. Even here, however, the peculiar social character of the medical profession must guide at least its methods of trade-union attack. Above all it must not be forgotten that the employer in this aspect of the labor struggle is the working class with its own low standard, that in distinction to accident compensation, the largest part of the burden falls on the workers themselves. Workingmen seldom deny the necessity of a higher standard than their own for the physician who serves them, but they can hardly be blamed if they are not ready to admit that this normal standard includes automobiles, a retinue of servants and membership in exclusive clubs.

Even in this financial fight the medical profession may be misguided. The famous British economist Sidney Webb points out, for instance, that as yet the physicians were the greatest beneficiaries of the insurance act, having a guaranteed source of income as against the speculative character of private practice among the poor. Moreover, this aspect of the problem need perhaps cause less worry to physicians in America than in any other country. The American people are used to a liberal scale of medical fees. Nothing illustrates it better than the medical fee schedules adopted in some compensation states. It is true that the conditions of remuneration as established by numerous lodges in the East, or by the so-called 10-cent medical organizations, appear as a threat of what a further extension of collective medical aid may bring. But the medical profession may meet these undignified forms of contract in one way only—by supporting and cooperating with the rapidly growing movement for organized sickness insurance, rather than opposing it.

Far more harmful is the tendency shown by British physicians, and which may be noticed here, to fight this movement in principle. Most physicians look with apprehension on any inroads into the field of private practice; hence the silent opposition to extension of hospital facilities and the noisy opposition to dispensaries and 10-cent doctors.

In this the medical profession is hopelessly behind the times. In its worst phase private medical practice is medically from twenty-five to fifty years behind the present status of medical science and surgical skill. In its best phase it is a luxury, which like automobiles or private yachts can be purchased only by the selected few.

The socialization of medical service has been wofully delayed, as compared with many other functions of far lesser importance, but at last it is on its way. The purpose it must accomplish is twofold—improvement in quality and cheapening of cost. These purposes cannot be easily accomplished in face of an obstinate opposition from the medical profession.

PROBLEMS

The technical problems arising in connection with the relation between a sickness insurance system and the medical profession are many and complex. It is quite impossible for me to treat of them in detail in the present article. I can do no better than recommend the splendid monograph by an English student, Mr. I. G. Gibbon, entitled "Medical Benefits," to the consideration of any one interested. Whether the millions of individuals protected by the sickness insurance system be granted the right of selecting their physician (on the preposterous theory that the patient may be the proper judge of the physician's ability, a theory retained from private practice because individual successes have often been built on it) or whether the physicians be selected by persons qualified to judge, as are physicians of hospitals, or members of other professions of equal importance; whether the remuneration of the physician be in the form of a regular salary, as is done in some German cities, and in the so-called Zemstvo medical service of Russia (perhaps the greatest organization of medical aid that the civilized world has seen as yet), or whether it should be computed in proportion to the visits the doctor succeeds in making, as in Leipzig, or in proportion to the number of permanent clients he succeeds in attracting as in England, or whether he should perhaps be remunerated in inverse proportion to the amount of medical aid he is forced to give, as the Chinese are supposed to do — all these are questions in which the medical profession should and will be heard. No one of the advocates of sickness insurance in this country for a moment intends to force an entirely new system of medical aid organization down the throats of the American people. It is recognized that habits and customs of the people change but slowly. But the unmistakable tendency is toward better organization. The present methods are admittedly inefficient and wasteful. An exclusive curio shop on Fifth Avenue may profitably wait a whole day for a single customer and make him pay all the overhead charges for that day. A popular department store must be built on a more economic utilization of capital and labor.

The workingman cannot afford to pay for the time the physician wasted as well as the time he worked. The workingman needs the expert specialist, not the expensive one. It is admitted that the active physician should work at least as hard as does the engineer, the teacher or the statistician. The preposterous charges for expert surgical aid are sometimes defended on the grounds that operations are few and far between. At the same time there are thousands who must be pauperized because operations are too costly. With proper organization of medical aid, such as only a national system of sickness insurance can give, when a physician has a normal working day and does not waste his time in senseless waiting or useless riding, and will command only reasonable but certain remuneration, when the antiquated pretense of omniscience will be abolished and the physician will not be ashamed to admit his ignorance of some things, or prohibited from announcing his expert knowledge of others, then and only then will the medical profession cease to be a speculative profession with splendid prizes to a few, very few, and sad disappointments both financial and ethical to the majority.

For what are the plain unadorned facts? The recent report of the United States internal revenue office disclosed the existence of about 357,000 incomes over $3,000 a year in this country. Let us allow for a certain amount of tax dodging. The preliminary estimates of the federal government assumed about 425,000 taxable incomes. Let us add incomes over $2,500 and assume an entire million families over that level. It still remains true that these represent less than 5 per cent. of the twenty odd million families in this country. And outside of that small group the cost of efficient medical aid (that is, the only kind worth having) in a case of serious illness is either prohibitive, or ruinous, or at least a serious hardship. The fortunate individuals who furnish medical and especially surgical aid to the selected few may prosper and pocket their handsome fees without any throbbing of their heartstrings. But the conscientious physician who is forced to cater to the millions cannot help recognizing that frequently the fee which he should receive is required by the patient for the purchase of necessary food or care. If he happens to know, as he often must, that his visits are altogether ineffectual except for the moral effect, that knowledge for any one with a social conscience must be very bitter. That he needs the fee to meet the bills does not seem to me to be any social answer at all.

There is only one way to meet this economic and ethical problem which has as yet been devised; a system of insurance which meets the economic loss of illness at least half way, and a system of organized medical aid which reduces its cost substantially without pauperizing the patient or degrading the physician. Social insurance against sickness meets both these problems and it has therefore become a world-wide movement. The medical profession can fulfil the time-honored glorious oath of Hippocrates by giving to it a modern broad social content and by helping instead of hindering the development of social insurance.

My brief experience with the practice of medical arts, though discontinued over a decade ago, has left me with sufficient professional pride to make me hope and believe that such will be the attitude of the American medical profession.

The American people have been criticized as suffering from the childish conceit of the half-grown. European institutions have been ridiculed or discarded, sometimes with what seemed insufficient cause. The American physician was perhaps the first to recognize how young and inexperienced we were here, and how much we could learn from Europe. Within the last twenty years or so the childish American conceit has fortunately given way. Slowly at first, and faster as time went on, we learned to see ourselves as others see us, and have found wherein we were deficient. In a great many things we are still behind, but in some things our progress has been almost phenomenal. Our New York compensation law, for instance, will bear comparison with the best in Europe, and is vastly superior to that of England. Our great American universities may be equaled by few outside of Germany. Our children's courts have been imitated everywhere throughout the world. In many lines of social legislation, as in mothers' pensions, we are teaching a lesson to Europe. Our theory and practice of scientific social work is vastly superior to similar European efforts.

A solid foundation for a new national pride is rapidly developing. Let us hope that in the development of social insurance we shall find in the American physician not the stubborn opponent that the British medical profession has been, but an enthusiastic ally, and thus once more prove that in social ethics we are able and willing to rise above European standards.

Making a Peaceful Life.—Remember that in life you ought to behave as at a banquet. Suppose that something is carried round and is opposite to you. Stretch out your hand and take a portion with decency. Suppose that it passes by you. Do not detain it. Suppose that it has not yet come to you. Do not send your desire forward to it, but wait till it is opposite to you.—*The Encheiridion.*

A METHOD OF OBTAINING DENTAL SERVICE IN HOSPITALS BY THE APPOINTMENT OF INTERNS[*]

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In 1901 and 1902, the first dental department of a clinic or hospital in New York City was established in St. Bartholomew's Clinic at 215 East Forty-Second Street. This has had a continuous existence up to the present time. The organization and direction of the dental service was carried on by Dr. J. Morgan Howe.

Shortly after this Dr. John W. Brannan, the president of the Board of Trustees of Bellevue and Allied Hospitals, suggested the establishing of a dental service in Bellevue Hospital. This seemed a good suggestion. In the first place, it appeared that a weak point in the chain of resistance to the inroads of disease was the lack of intelligent care of the mouth and teeth, and the opportunity to be associated with this great emergency hospital offered excellent conditions for putting into execution plans which might show that no satisfactory attempt could be made at prevention of disease without considering and including the oral cavity and its contents. With the cooperation and assistance of Dr. Brannan, we set about securing a staff for Bellevue Hospital. In arranging for a permanent dental staff we tried as far as possible to avoid the conditions that seemed sure to arise, and did arise within a short period. The dental profession was divided into two camps: those who favored all dental service of this type being paid for by some one, either the city, institution, or through charitable donations, and those who favored the dentists giving their services as the physicians did. It seems probable that those who favor the payment of the dentist for his services in this charitable work are largely in excess of those who do not; and feeling that this question would arise sooner or later, we endeavored to steer a middle course.

Our plan was as follows: In hospitals in which physicians gave their services the dentists should do likewise, but in turn the dentist should receive due recognition and be appointed on the same basis and with practically the same title as the physician in a corresponding department in medicine or surgery. The dentists had their titles conferred as in the surgical and medical departments. For instance, there was a director of the dental service at Bellevue. There was created a staff of visiting dentists, who represented the older and more experienced men, and a staff of assistant visiting dentists, who represented the younger class more recently graduated; and these were appointed with the understanding that they serve a specific time, weekly or monthly. It is usual for the visiting dentists to come every two weeks or once a month, and for the assistant visiting dentists to serve one or more afternoons per week; besides this, there was eventually, after two years or so of experiment, established a dental intern who lives at the hospital, associates with the medical and surgical interns, and is retained on exactly the same conditions as the other interns, receiving a certificate at the end of his service.

I have had those interested in other hospitals approach me in regard to establishing dental departments for them, but with the exception of Bellevue I have not found those who were willing to give a man the full honor and position due him unless he had the M.D. as well as the D.D.S. This attitude would prevent dental service in most hospitals.

The plan adopted at Bellevue was extended to the Allied Hospitals, one by one; first to Harlem, then to Fordham, then to Gouverneur, with the exception that up to the present time there has not been an intern appointed at any of these Allied Hospitals. Gouverneur is, however, at present, actively engaged in the attempt to secure an intern. It seems probable from our experience at Bellevue that the addition of an intern to the other hospital staffs will double, or more than double, the efficiency and quantity of service that can be obtained from a dental staff in a given time. This is due to the fact that there is somebody at the hospital at all times not only to attend to emergency cases as they come in, but also to arrange and so distribute the work that there is a greater conservation of time and less waste in waiting and arranging for various things. Last, but not least, in this plan of service is the question of a nurse assigned to the dental department.

At the original inception of the dental service, social service nurses, who were under no particular authority, were furnished, but this proved decidedly unsatisfactory and undesirable. Later one of the regular nurses in the hospital was appointed to serve in this department. Practically all of the regular nurses who have served have been deeply interested in the work, and they are enthusiastic, with the result not only that their service in the department of cleaning instruments, caring for the patients, sterilizing implements and arranging supplies has been of the very greatest assistance, but also that their assistance in obtaining patients from the wards with the least expenditure of time, and the keeping of the accounts and records has been of such a character as to entitle the nurses to a good share of the credit for the success of the dental service.

To establish and obtain a successful dental service in an organized public or private hospital the following things are necessary: the dentists must be men willing to sacrifice some of their time in public service and who have a sincere belief in the usefulness and beneficence of their work. They must be regular in their service. The managers or board of directors of the institution must be in sympathy with the work, willing to assist in every way possible and willing to overlook the many shortcomings that are bound to develop on the part of the dentists from lack of experience. There should be also general medical directors or superintendents who are sympathetic with and desirous of using the dental service to the limit of its possibilities for the welfare and upbuilding of the hospital.

An idea of the value of the dental service to Bellevue may be given in instances of record. The service is arranged so that those who shall be first received are the children of the various wards; and it is within the province of the dental department to retain the patients in the hospital until such service as they deem necessary shall have been obtained by the patient. There are at present on the staff of Bellevue and Allied Hospitals no less than twenty-eight or thirty dentists. A goodly part of these serve comparatively regularly, as may be seen from the following report of the services rendered last year.

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[*] Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

At Bellevue Hospital there was given, in time, by the staff, 1,998—practically 2,000 hours. There were attended to in this one hospital alone by the dental department, 1,161 children and 1,142 adults. There were performed altogether, including major and minor operations, which run from mere treating of a carious tooth with an inflamed pulp to operations for necrosis and carious bone, and the setting of fractured mandibles—5,956 operations. In Harlem Hospital, where the work is carried on entirely by a staff of women dentists, in charge of a woman dentist, there were 231 children attended to and 19 adults. The operations here represented something over 600. At Fordham Hospital, where the staff is comparatively small, there were 154 children attended to and 78 adults. The number of hours put in by this staff was 141, and there were performed a total of 874 operations. The dental service at Gouverneur had not been organized fully a year at the time of this report, Dec. 31, 1913—and yet here, with a comparatively small staff, there had been attended to altogether 451 individuals, and there had been performed, from April 1 to December 31, 700 operations—a pretty good service for part of a year.

As an economic proposition, let us see what Bellevue has accomplished in one department only of the dental service as a money saver for the city of New York. Fractures of the jaw, and major treatments of this kind, run about 100 per year in the dental service. Previously all fractures had to be sent elsewhere or else put in the ward and the patients bandaged; there had to be a nurse in regular attendance and the patient had to be cared for, housed and fed for a period extending from five to ten weeks. One may estimate for oneself the cost per patient to the city under these conditions. After the establishment of the dental service there was equipped a dental laboratory sufficiently complete to make vulcanite and metal splints for fracture cases and for doing various other mechanical things that might be demanded in the dental service of any well-equipped office. When patients are sent to Bellevue now with a fractured jaw, they are as soon as possible taken to the dental department, an impression is taken and a splint is made and placed in the mouth. This can usually be done in from one to three days. As soon as the splint is in place, if the injuries are not such as to make it impossible for the patient to go about his usual vocation, he is permitted to return to his occupation at once, coming back to the hospital two or three or four times a week for observation and cleansing. The difference between keeping a patient from five to ten weeks, with a nurse in constant attendance, and keeping one three or four days and allowing him to leave, in the matter of expense is very great, and the economy must be credited to the dental department. I venture to say that the city of New York has been saved considerably more on its fracture cases alone by the dental department than the entire dental service has cost from the beginning to the present time, to say nothing of the improved conditions that have obtained for the patient and the amount that has been saved to patients because of their ability to return to their occupations, within a very few days. Add to this the probable certainty that the dentist will set a fractured jaw so that there will be a proper occlusion after the bone has healed, and you have a very simple but strong argument in favor of the establishment of dental service in a hospital. But this subject would require a paper in itself and I will confine myself to the executive part of the work.

I think that the foregoing statement has shown that if the dentist is given due consideration and authority equal to the responsibility placed on him, it is not impossible to establish a useful and successful dental service in a general or emergency hospital.

There are of course conditions and circumstances which make it impracticable to obtain dental service on this basis, and there are arguments on the side of the men who advocate that dentists shall be paid for their service wherever it is rendered, by somebody or in some way, and experience leads me to believe that circumstances alter cases and that one has to use judgment as to which of these methods one will apply to a given case. At Bellevue and Allied Hospitals the methods described have worked out extremely well. I do not consider that the dentist as yet realizes the necessity of being responsible and regular in his service to the extent that he should, but conditions are improving in this direction.

At St. Bartholomew's it was impossible to get a dental staff on any other than a paying basis. Even then, under the direction of a man who was not recognized by the dental profession, the service gradually ran down and became a failure. Later the service had to be reorganized, and it was found necessary to continue the practice which had been established of paying for the dental service. The payments are not high, in fact they are ridiculously small, but they are sufficient to assist young men who are anxious to spend part of their time in establishing a practice and willing to spend the other part to secure enough to give them a small income as a certainty. Therefore it is not hard work to secure a fairly high class of young men in this service.

If a salary is paid, we can demand certain hours, that the dentist practice along the lines that those in authority wish, and closer supervision and a greater authority can be exercised. The result is that the work can be greatly expedited and the energies utilized may be and are greatly conserved. Although comparisons are invidious and often misleading, the following will show what I mean:

At Bellevue the intern may be said, in a sense, to receive at least some return for his services. None of the visiting or assistant visiting dentists, or the director of the service, receives anything, so that if a man feels, for any reason, that it is impossible for him to be at the hospital at the time he is supposed to be, without much compunction he fails to appear. It requires considerable effort sometimes to impress on them the necessity of appearing regularly. Patients are often brought into the dental department ready for dental service, only to find that the expected assistant visiting dentist does not appear. This is annoying to everybody, besides being a great waste of energy, and costing in loss of time and inconvenience.

At Bellevue, with a staff of twelve, it has been pointed out, the operations performed last year totaled 5,956, which is without doubt an unusually good showing, as evidenced by the number of hours, practically 2,000, which were put in by the staff of Bellevue Hospital alone.

At St. Bartholomew's clinic, with but two men on the staff besides the director, who does no work at the chair, one working every afternoon from 2 until 5, and one two evenings a week, they attended to 5,000 persons and performed over 7,500 operations. This was because the men had to be there, furnish a substitute, or lose their salary, which acts as a strong incentive to keep a man at his work. I am satisfied with both methods that have been described, and believe that, with discretion, either may be used successfully.

I have frankly told those desiring to establish dental service in a hospital, who were unwilling to appoint dentists on the same basis and give them the same standing as the medical attendants, that I saw no other way but to pay a salary. I myself would advise any dentist against serving in a hospital where his recognition was not as complete as that of physician, unless he serves for pay, and that is his own affair. I am not sure but that a small stipend or salary paid to a man (and this would perhaps hold good in the medical and surgical departments) would enable us sufficiently to control those giving the service, so that the work might be directed in a way to save time. It is not impossible that this might serve to make it cheaper in the long run to have a paid service.

This is not intended as an argument either way on this subject. It is a matter that will have to be worked out by experience. I am, however, of the opinion that whether or not it be a paid service, some method whereby it is possible to insist on men's serving the time they say they will is essential in order to obtain the most efficient and desirable results.

560 Fifth Avenue.

ABSTRACT OF DISCUSSION

Dr. W. C. Fisher, New York: This paper proves conclusively what I contended two years ago was necessary in order to get proper dental service in hospitals. Dr. Flanagan of Springfield, Mass., read a short paper before this Association in 1912 on the need of a dental staff attached to hospitals, and in the discussion the question was constantly asked, how could this best be accomplished? Dr. Brown of Milwaukee did not believe proper services could be obtained in a hospital of any size except through internships, and that dental service should be paid for the same as medical service is paid for; that the real work of the hospital was done by men attached to that hospital, under the supervision of more experienced men, and that the dental intern should be there constantly also.

Dr. R. H. Ivy, Philadelphia: In 1900 an oral surgical staff was appointed at the Philadelphia General Hospital. There were four men appointed, two of whom held the dental degree, the other two both medical and dental degrees, and they were all received on equal footing with the medical members of the staff of the hospital. One year later, in 1901, two interns were appointed in that hospital on an equal footing with the other interns of the hospital and under the direction of the visiting staff, and it was decided at a meeting of the medical staff that all cases of mouth conditions and many cases in which the mouth was responsible for the general condition, should be turned over to them for treatment. This plan worked so well that there have been two dental interns on the hospital staff continuously since that time, the dental men working always in harmony with the medical men and belonging to the society of the residents of the hospital. This year the same plan is being carried out in the Episcopal Hospital. A resident dental surgeon on an equal footing in every way with the medical residents has been appointed and has been given a splendid equipment to perform all kinds of dental and oral surgical operations. It is now being contemplated to increase the number of dental interns in the Philadelphia Hospital so as to have two on duty to care exclusively for the tuberculous patients, it being deemed desirable to keep these patients separate from the others in regard to dental treatment.

Dr. M. H. Cryer, Philadelphia: I would like to add to what Dr. Ivy has said, that the four members who form the oral surgical staff give clinics for eight months in the year on Saturdays, and they for some reason have the largest clinics given in the city of Philadelphia. The average attendance for the past winter from the various dental and medical schools was 350. On some occasions we had as many as 450 students and practitioners at these clinics. The city of Philadelphia also gives a certificate to those who attend 80 per cent. of the clinics, and these certificates are signed by the oral surgical staff, the Director of Public Health and Charities, and the city seal of Philadelphia is placed on the certificates. These certificates have become so popular in foreign countries that they stand higher to-day than the university degree, because they are signed by an official of the city and bear the seal of the city. When a graduate goes to a European country, he is asked where he has attended his lectures and what degrees he has. When he answers that he has the University degree, the Philadelphia Dental College degree, or the Medico-Chirurgical College degree, they ask, "Have you a certificate from the Philadelphia General Hospital? We consider that better than any other degree." That is what we have been doing in Philadelphia since 1900.

The dental interns in the Philadelphia General Hospital (Blockley) are appointed in this way: At the clinics and lectures announcement is made that two interns will be appointed each year, and that Dr. Roe, Dr. Russell and myself will be glad to receive applications from students wishing these positions. The students making application are specially watched during the senior year of their course. These men are required to make a certain class of splints and do other operations up to a certain standard, after which they are passed on by the faculty of one of the three schools, and then passed by the state board. Then the applications are gone over by Dr. Roe, Dr. Russell, and myself and we decide which men we will appoint as interns. They are then recommended to the Director of Public Health of the city and he makes the appointments. These men serve one year, and if their service is satisfactory and they wish to continue, they are allowed to serve another year. The dental interns belong to the Intern Society which has been in existence for many years, and they are received on an equality with the medical interns, and the oral surgical staff members belong to the medical board of the hospital. This has been going on since 1900, and the plan has been adopted by other countries—France, Italy, Spain and others—and in 1904 the government of Spain sent Dr. Aguilar to Philadelphia especially to see what we were doing there in taking care of the mouths of some five thousand patients in the City Hospital.

Dr. T. L. Gilmer, Chicago: I have been a member of the medical board of St. Luke's Hospital, Chicago, for twenty years, and Dr. Black is also similarly connected with the same hospital. We are there on exactly the same basis as are the other members of the staff. We are designated as oral surgeons. I think this is a good time to work for extension of the service to include dental interns in hospital work, since it is now recognized by physicians in general that the mouth infections play an important part as a primary factor in the etiology of infections in different parts of the body. The mouth foci must be eradicated before patients can be cured of heart, joint, or other lesions, which may be secondary manifestations of the mouth focus. Much of the work, especially the strictly dental part, may be done by the dental interns, relieving the oral surgeons of much of the less important service which is imposed on him at the present time.

Dr. M. I. Schamberg, New York: It is gratifying to hear the report of the appointment in Philadelphia of interns as a matter of priority over New York. However, in Philadelphia you have one hospital which has interns, while in New York, through the efforts of Dr. Wheeler, we have many which have adopted the internship plan. While hearing this paper it has aroused my desire to ask for a dental intern in our institution, for the reason that I frequently request that many of the fracture cases be put through the so-called prophylactic treatment prior to treating the mouth, so as to avert, if possible, any secondary disease that may occur. In this way I believe the proportion of cases of necrosis and abscess conditions that follow fractures would be materially reduced. I feel confident that the addition of an intern in our institution will raise the efficiency of our work 100 per cent.

Dr. G. V. I. Brown, Milwaukee: I am on the surgical staff of the Children's hospital in Milwaukee just as all the other surgeons are. We have recently had a visiting dentist appointed on the staff. In order that we might outline the work he and I have made a complete examination of the children's mouths in the hospital, and as simple as that may sound, we found it difficult to do, for we found it impossible for us to do it all in one day, and between visits the children would come and go. As the result of our work, the dentist has just sent in a recommendation which will call for a mouth examination as part of the regular intern's examination for each patient. For example, when the history of the case is taken, the general physical examination will include an examination of the mouth with sufficient accuracy to warrant calling in a dentist or otherwise. At least there will be a mouth record of every case the same as the physical record. There has not been any mixing of medicine and dentistry on that; we consider that it is a matter which pertains to the welfare of the patient. We found an appalling state of affairs in the hospital. We found that little patients were lying in bed for months, being treated for joint diseases when they had anywhere from one to five diseased teeth in their mouths. In view of the recent investigations and demonstrations, the importance of this will be understood. We are to blame for that as much as the surgeons; it is a question of wrong routine. In the other hospital with which I am connected I have not had the courage to have a dentist intern appointed. I did not care to have the matter disturbed and have other questions arise which I could not meet. I am there simply as an oral surgeon. When Dr. Wheeler gets this work on the right basis, and when somebody has shown me exactly what should be the relation of the dentist in the hospital, then of course I want to appoint interns. In the meantime, however, I do not care to take the responsibility.

Dr. A. D. Black, Chicago: It is only necessary for a person familiar with mouth conditions to spend a few minutes in a hospital to see the necessity for this work. The greatest difficulty in establishing the work heretofore has been the lack of appreciation of the physician of it and the difficulty of placing dentists in the service on the proper basis, because we cannot get the kind of men we want to do this work under the conditions which have heretofore presented in most of the hospitals. I wish to emphasize that there has been enough published in the medical literature of the past two years, to say nothing of any other work, to have attracted the attention of every physician on every hospital staff to the importance of the mouth as they have never appreciated it before, and there should be no difficulty at present in presenting to any hospital one or the other of the plans which Dr. Wheeler has outlined and have them accept a plan and appoint dentists for the service. In St. Luke's Hospital in Chicago, as Dr. Gilmer has said, we have done many things that are not expected of us, because of the crying need for it. I know I have many times sacrificed time which I was not expected to give because of the need for dental service among the patients and because under the hospital arrangement there was no other way to get the service. There is another feature to this work that I would like to speak of, and that is that there is opportunity in the establishment of these internships in hospitals for the dental profession to get credit for the service or to be embarrassed by the service given, in accordance with the type of men who are selected for this service. We need to be extremely careful of the men we put in because the contact with the medical men and the patients in that service is of tremendous importance. We have the opportunity there to impress on them the value of this dental service as we have in no other way.

Dr. T. F. Tholen, Los Angeles: In the Los Angeles County Hospital we have an oral surgeon who visits the hospital and who confers with the men in the surgical section as to the treatment of oral surgical cases. We have had very good results from this method, but Dr. Wheeler's method seems to be so much better that I think I will do what I can to induce them to introduce his method.

Dr. E. A. Bogue, New York: It does not seem to have been recognized by the medical world at large until lately that the mouth and nose, which are connected by one passage, constitute the entrance for all that we take in to support life, and almost all that we take in to destroy it, and that the condition of the teeth has much to do with the general health. It seems to me that Dr. Wheeler has pretty nearly put us on the track of developing our section and placing it in its proper position in the medical world. I hope he will persevere until all of our hospitals establish the intern system for dental practitioners. As I understand it, all these interns have to be graduates?

Dr. Wheeler: At present they not only have to be graduates, but also have to pass the state board.

Dr. Bogue: In England there is a practice of extracting all temporary teeth, if one happens to be bad enough to come out, but we are rapidly getting away from such practices. In several of the European countries the governments are appointing dentists to take care of the teeth of the children, and in this country, the Forsyth Infirmary in Boston, of which you all know, is doing an enormous amount of work in the way of caring for the teeth of the poor children of the city.

Dr. H. L. Wheeler, New York: There is just one way to get dental service in the children's hospital, and that is to appoint dental interns and let them live there with the medical interns. The service cannot be had in any other way unless it is paid for, and if this scheme is adopted trouble arises because the medical men also want to be paid. This subject in New York City has had a good deal of discussion, not only in the profession but by the laity, and only recently the committee of the Board of Estimate and Apportionment decided to recommend that dentists be put in the same classification as medical men in every department where dentists are to be appointed. They have decided to have first class interns, both medical and dental, men who have graduated from college but who have not yet passed the state board unless they wish to. They may be appointed intern for one, one and a half, or two years, and receive a certificate from the hospital when they finish their service. They are to receive besides as spending money, $240 the first year and $360 the second year. Any man who has served as an intern for one year, or served in the dental clinic for two years, which clinic requires of him three hours' service each week, may be appointed to the second grade which is known as the junior grade. The junior grade is to receive from $900 to $1,380 and is on the same basis as the physician in the Department of Health. After he has served two years in that department he may be advanced to number three grade, which starts at $1,560, to any price that he may be worth, and that is where he has an advantage over the medical man, because the medical man can only advance to the third grade. That is what we are doing in New York. The only satisfactory way to do this is to have the dental men put in the hospitals on the same basis as the medical men and use a little precaution as to who is selected for the dental staff, because one dental man who is a little too aggressive can wreck the whole thing, and the dentist who uses due discretion will make it possible to get the support of the city fathers and get the necessary means to carry on the dental service in any city. The final result of this in New York is going to be that in all clinics which are supported by the benevolently inclined public and charity organizations, these young men will be employed to go into the classified service, which is under the regulation of the city Department of Health, and that will be the only way that one can get into the classified service.

A Guide to Contentment.—Seek not that the things which happen should happen as you wish; but wish the things which happen to be as they are, and you will have a tranquil flow of life.—*Epictetus.*

ANKYLOSIS

AN EXPERIMENTAL STUDY*

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This experimental study was undertaken for the purpose of investigating the changes that take place in the joint structures during the process of ankylosis. In a previous study[1] on the mobilization of ankylosed joints, it was observed that there was a marked difference in the reaction to injury between epiphyseal and diaphyseal bone. In the experiments reported there was fibrous union between two denuded joint surfaces at the end of sixty days. At the end of this period of time there was no evidence of bony ankylosis. A further study of this process was carried out in the experiments here reported with the belief that the facts gained will aid in the surgical treatment of ankylosed joints.

Hoffa[2] has defined ankylosis as the condition in which two or more joint surfaces become bound together and immovable. He distinguished three types; an intercartilaginous fibrous ankylosis, an interosseous fibrous ankylosis and an osseous ankylosis. True bony ankylosis, according to Hoffa, may be produced in two ways. Sometimes there is transformation of the connective tissue of a fibrous ankylosis directly from a cartilage metaplasia. At other times following the destruction of cartilages from inflammatory diseases, bony union develops from the bone marrow and periosteum.

Nichols and Richardson[3] from the study of sixty-seven cases of non-tuberculous arthritis, divide this condition into two types; namely, a proliferative type and a degenerative type. In the degenerative there is a tendency to destruction of joint cartilage with deformity and no ankylosis.

An arthopathy, such as a Charcot joint, is typical of this class. In the proliferative type there is destruction of joint cartilage leading to ankylosis of adjacent joint structures. In this type the earlier change is a proliferation of the synovial membrane at the insertion of the joint capsule. This leads to a pannus growth which advances over the cartilage, at times uniting the two joint surfaces and destroying the underlying cartilage. Accompanying this process there may be destruction of the joint cartilage on its epiphyseal surface by granulation tissue from the marrow spaces. These investigators believe that the destruction of cartilage by the pannus growth predominates, though either process leads to fibrous ankylosis. True bony ankylosis, according to Nichols and Richardson, may be produced in three ways. In certain instances there is a proliferation of the perichondrium, which is readily transformed into cartilage or bone. In other instances new bone production results from osteoblasts which have their origin in the bone marrow. Finally, in rare instances, there is a direct transformation of fibrous tissue into bone.

Axhausen and Pels[4] and Kroh[5] have described joint changes resulting from injury in experimental studies of arthritis deformans. In the literature above referred to various joint changes have been described, but the sequence of these changes and the duration of the ankylosing process have not been made clear.

The object of these experiments was the study of the nature, sequence and duration of the joint changes which lead to bony ankylosis. In these experiments the knee joints of dogs were used. All experiments were done under complete ether anesthesia. All operations were done under a careful aseptic technic. Postoperative care of the animals used was such as to insure as little suffering as possible. All animals were sacrificed with chloroform. Four experimental methods were used.

I. Partial excision of joints......	8 experiments
II. Destruction of joint cartilage..	3 experiments
III. Injury to joint cartilage........	2 experiments
IV. Direct infection of normal joints	7 experiments

I. PARTIAL EXCISION OF JOINT

The knee joint was opened by a lateral longitudinal incision, the patella and its tendon were displaced medialwards, the cruciform ligaments were divided. The knee was completely flexed and 1 cm. of the lower end of the femur and 0.5 cm. of the upper end of the tibia were removed with a saw. The joint was then closed with interrupted fine silk sutures and held fixed by a plaster-of-Paris dressing.

SUMMARY

In these experiments in which the joint was partially excised and the cancellous bone surfaces of the epiphyses were approximated, there was produced the simplest experimental condition for the study of the development of bony ankylosis. The condition is the same as that which is produced in a surgical operation for the mobilization of an osseous ankylosis.

These experiments show that ankylosis by bone is a slowly developing process.

At the end of six days (Experiment 10) the apposed bones were united by a fibrous exudate into which is growing granulation tissue from the bone marrow. At the end of nineteen days (Experiment 3) the bones are united by connective tissue. In Experiments 4, 8, and 2 of fifty, sixty-four, and eighty-six days respectively, the connective tissue uniting the bones became progressively more fibrous in character. At the end of 146 days (Experiment 7) the fibrous ankylosis was being changed into an osseous ankylosis by a direct transformation of the fibrous tissue into bone. In Experiment 5, after 180 days with close approximation of the bone surfaces, the ankylosis was by bone.

II. DESTRUCTION OF JOINT CARTILAGE

The knee joint was opened by a lateral longitudinal incision, the patella and its tendon were displaced medialwards. The semilunar cartilages were removed from the head of the tibia, and the joint cartilage was curetted from the joint surfaces of the tibia, femoral condyles, and patella. The joint was closed with inter-

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[*] From the Surgical Laboratory of Washington University Medical School, St. Louis.

[*] Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Allison and Brooks: The Mobilization of Ankylosed Joints, Surg., Gynec. and Obst., 1913, vii, 645.

[2] Hoffa, A.: Ortho. Chir., 1902, Stuttgart, F. Enko, Ed. 4, p. 55.

[3] Nichols and Richardson: Arthritis Deformans, Jour. Med. Research, 1909, xxi, 149.

[4] Axhausen and Pels: Exper. Beiträge zur Genese der Arthritis Deformans, Deutsch. Ztschr. f. Chir., cx, 110.

[5] Kroh, F.: Experimental Arthritis Deformans, Deutsch. Ztschr. f. Chir., 1909, xcix, 425.

rupted fine silk sutures. The limb was held fixed in a plaster-of-Paris dressing.

SUMMARY

In these experiments in which the articular cartilage was destroyed the condition produced was essentially the same as that in which partial excision was done, except that the normal contour of the bones was unchanged. This condition is the same as that which follows a surgical operation for the mobilization of an ankylosis in which the bones have retained their normal shape—such as is found in fibrous ankylosis.

These experiments show that after destruction of joint cartilage there is union of the joint surfaces by connective tissue which is slowly transformed into bone.

In Experiment 22, actual union by bone was not complete at the end of 334 days.

III. INJURY TO JOINT CARTILAGE

Experiment 23. Knee joint opened in the usual manner. With a curet small areas of cartilage were removed from the inferior surfaces of the femoral condyles and from the outer surface of the tibial head. The joint was closed as usual. No plaster-of-Paris dressing was applied.

SUMMARY

In this experiment the injury to the joint cartilage was comparatively slight. Fourteen days after the destruction of a small area of joint cartilage there was an inflammatory process in the joint which was destroying the cartilage in a manner exactly similar to that which follows infection of the joint cavity. In Experiment 27, in which the joint injury was limited to a transverse patellar fracture, there were after 365 days definite pathologic changes in the joint cartilage and synovial membrane.

IV. DIRECT INFECTION OF NORMAL JOINTS

In these experiments the organisms were injected directly into the knee joint cavity with a hypodermic syringe. The organisms used were a *Staphylococcus aureus* obtained from a fatal case of pyemia in man; and a bacillus tuberculosis of the human type, which had been grown in the laboratory for several years. Of the *Staphylococcus aureus*, twenty-four-hour broth cultures were used for injection. Of the tubercle bacilli one-month glycerin-agar cultures were suspended in normal salt solution.

SUMMARY

In these experiments, in which bacteria were introduced directly into the joint cavity, characteristic pathologic changes resulted. The joint changes in the experiments in which tubercle bacilli were used were the same as those observed in the experiments in which the staphylococcus was used. The extent of the joint changes and the general reaction to the infection varied widely in the different experiments.

Immediately after the introduction of the infectious agent into the joint cavity there was a marked local reaction evidenced by swelling, heat and tenderness. There was a fibropurulent exudate in the joint cavity, which produced adhesions between the capsule and the condyles, resulting in a marked diminution in the size of the joint cavity. The destruction of the joint cartilage was always the result of absorption by granulation tissue. Granulation tissue arising from the proliferating synovial membrane destroyed the cartilage at its margin and granulation tissue from the bone marrow destroyed the cartilage from below.

GENERAL SUMMARY

From the experiments in which the joint cavity was infected with tubercle bacilli or staphylococci, or in which a slight injury was done the joint cartilage, we are led to believe that any inflammatory process within a joint which is of sufficient severity to result in the formation of granulation tissue will destroy the joint cartilages. The cartilage is absorbed at its margin by granulation tissue arising from the synovial membrane and at its base by granulation tissue from the bone marrow.

By the experiments in which the cartilage was removed by operation, or the joint partially excised we have shown that ankylosis by bone is a slowly developing process which consists of the following stages: 1. There is union by granulation tissue; 2, there is union by dense fibrous tissue; 3, there is a metaplasia of fibrous tissue into cartilage and a direct transformation into bone. The shortest period of time in which complete bony ankylosis was observed experimentally was 180 days. In man the duration of the process is equally prolonged.

The long duration of the process of osseous ankylosis we believe explains the following: After arthroplasty a joint may allow motion for some weeks and subsequently become stiff. Fractures of the epiphysis unite by bone slowly. It also suggests that the conclusion reached by certain investigators that the interposition of soft parts prevents bony ankylosis is misleading in that many of their experiments were of insufficient duration.

The long duration of the fibrous stage of ankylosis also shows conclusively that any method of arthroplasty should have as its object the prevention of fibrous ankylosis rather than bony ankylosis; also that the insertion of an irritative substance into a joint should be avoided.

ABSTRACT OF DISCUSSION

Dr. J. Torrance Rugh, Philadelphia: Perhaps neither Dr. Allison nor Dr. Brooks has read a paper that I presented before the American Orthopedic Association four or five years ago; but Dr. Allison used almost the same words that I used at that time. My paper was a purely clinical one, based on a study of a series of cases of excised knee-joints; and the work that has been done by Dr. Allison carries out exactly the statement that I made then, which was based on clinical observation; that is, that bony union between the epiphyses of the long bones after excision does not take place under from six months to two years. I also made a plea, at that time, for the longer fixation of a joint after its excision, because of the great danger of deformity resulting from absence of bony fixation. I am extremely glad to-day to find the clinical observations that I made at that time proved correct by the experimental work of Dr. Allison.

The Proper Correlation of Experience.—When memory pictures have a faulty setting, they may influence behavior disastrously. The old man thinks all this talk about impure milk killing infants and infected water causing typhoid fever is nonsense, because all his life people, both young and old, have been drinking dirty milk and polluted water. . . . He has always connected these bereavements with the world-old belief that disease could not be prevented nor death delayed. . . . Many reason post hoc ergo propter hoc. This faulty logic is still a strong support of charlatinism in its many survival forms.—Victor C. Vaughan, *Science*.

THE BLOOD-PRESSURE DURING PREGNANCY

BASED ON OBSERVATIONS ON 450 CASES FROM THE RECORDS OF THE COMMITTEE IN CHARGE OF THE PRENATAL WORK CARRIED ON BY THE WOMEN'S MUNICIPAL LEAGUE OF BOSTON *

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BOSTON

The patients (450 in number) on whom this report is based were referred to the prenatal committee of the Women's Municipal League of Boston for care during pregnancy, either by institutions which have no facilities for prenatal work, although equipped to care for the labor and convalescence of their patients, or through the personal application for prenatal care made by the patient herself. The length of time that the patients were under observation varied from a few days to six months, according to the period of pregnancy which had been reached when the patient first sought prenatal care, and averaged about two months or a little longer. As long as no abnormal symptoms developed the patients remained under the observation of the prenatal committee, but the care during labor was provided by the institution referring the patient or by the patient's private physician, and all abnormalities discovered during pregnancy were immediately reported to the medical adviser, the prenatal work being confined to close observation of the patient's condition and such advice as is suitable for a nurse to give.

The routine of the work is as follows: As soon as a patient is referred to the prenatal committee for care she is visited at her home by the nurse, who gives her practical advice, suited to her circumstances, in regard to the hygiene of pregnancy, diet, clothing, exercise, etc., takes the blood-pressure and examines a specimen of urine for albumin. This visit is repeated at ten day intervals, or oftener in doubtful cases, until the time of labor. All abnormalities are reported at once to the proper persons, so that in case of need the patient shall receive more adequate attention. This system is not, perhaps, ideal, since for the most satisfactory results the clinic in charge of the prenatal work should be in a position to provide adequate care for the abnormal cases which it meets, and there should be no division of responsibility, as inevitably occurs under this system, but it certainly results in giving these patients much closer observation than they would ordinarily receive.

This report is based on the records of blood-pressure thus obtained and is made with the feeling that although it shows nothing of startling interest, it will prove of value, even though the facts which it develops only serve to corroborate the work of previous observers. It has been recognized for some years that the estimation of the blood-pressure during pregnancy furnishes evidence of considerable value in determining the condition of a patient during pregnancy, an abnormally low pressure suggesting that the patient is likely to react unduly to the strain of labor and should be saved all avoidable shock and suffering, while a high pressure is not infrequently the initial symptom of a toxemia and should call for increased watchfulness on the part of the attending physician, even though no other abnormal symptoms are to be discovered on a thorough investigation. The average blood-pressure during pregnancy is commonly stated as 118, and it is also commonly stated that the pressure tends to rise toward the end of pregnancy in perfectly normal patients, a statement which in this series appears to be true for only a limited number of patients. The normal variations of the blood-pressure may be considered as from 100 to 130, and although the observations in this series are too infrequent to show what transitory changes may occur in the normal patient, only one patient in whom the pressure remained within these limits developed any abnormal symptoms. This patient developed postpartum eclampsia and had several convulsions, but made a good recovery. In this case the last visit of the nurse had been made eight days before delivery, and the blood-pressure had presumably not been taken during or immediately after labor so that we have no information as to the development of the toxemia, but in all probability a toxemia of low grade was brought into prominence by the exhaustion of labor. A closer observation of the patient before labor might or might not show the impending danger in such a case, but such an occurrence suggests that the pressure should be estimated in all cases during labor and soon afterward as well as during pregnancy.

If the blood-pressure remains persistently under 100 it is fair to assume that the patient's general condition is below par, and steps should be taken to improve it. At the time of labor the patient should be watched carefully and guarded as far as possible against exhaustion, since the patient with an unduly low pressure not infrequently develops shock and collapse to a marked degree following labor. If the pressure is over 130 the patient should be kept under close observation even in the absence of other symptoms, and a rising pressure should receive most careful attention. A pressure of 150 has been commonly called the danger line, but a persistent rise of pressure from a low point, even though it may never reach the arbitrary danger line, calls for most careful attention.

Of the 450 cases, 421 patients showed a blood-pressure that at no time was either below 90 or above 130; in other words the 421 patients showed what can be properly classed as absolutely normal blood-pressures. Of these 421 patients, 78 at some time during the pregnancy showed a pressure slightly below the normal, ranging somewhere about 90 and 100. In none of these patients, however, was the low blood-pressure persistent, it only being noted on one or two examinations, and in no instance did any uncomfortable symptoms develop in labor afterward referable to the low pressure, showing, therefore, that a temporary low blood-pressure is of no significance during pregnancy. Of these 421 patients, only the above mentioned patient who had postpartum eclampsia had any uncomfortable symptoms. The remaining twenty-nine patients showed at some time during their pregnancy a pressure which was above the normal limits, that is, above 130. There were four patients who ran a constant pressure of 140 at each examination and one patient who ran a constant pressure of 145 through the pregnancy. In none of these patients did any trouble occur, and the high pressure seems to have been due to other conditions rather than to changes taking place during pregnancy. In the remaining twenty-four patients the blood-pressure showed marked variations, running as high in one instance as

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* Read at the Fifth Annual Meeting of the American Association for the Study and Prevention of Infant Mortality, Boston, November, 1914.

195. This patient developed eclampsia in spite of treatment, and there were several other patients in whom threatening symptoms developed, but in whom the conditions yielded to treatment.

In the 450 cases the examination of the urine showed albumin persistently or temporarily fifty times. Eleven of the fifty patients who showed either transient or persistent albuminuria also showed a blood-pressure of over 130, and every case of toxemia, except the postpartum one mentioned, developed among these patients. The rise in blood-pressure preceded the finding of the albumin in every instance except one, suggesting definitely the fact that a rise in blood-pressure is apt to be followed by albuminuria and other symptoms of toxemia, and that a high blood-pressure plus albuminuria are symptoms which call for immediate attention. The recognition of the high blood-pressure plus albuminuria was immediately followed by proper treatment, which was successful with one exception in checking the process before it became serious, showing the value of frequent observation of the patient during pregnancy. The occurrence of albuminuria in more than one-third of the patients who show an abnormally high blood-pressure as compared with its occurrence in less than 10 per cent. of the patients who did not show a high blood-pressure, is definite proof of the value of the estimation of the blood-pressure during pregnancy.

The fact that in 421 of the 450 cases the blood-pressure was within normal limits and that in only one of these patients did any sign of toxemia occur, certainly tends to show that as long as the blood-pressure remains normal the presence of slight traces of albumin in the urine (which were noted in 39 of the 421) is negligible.

I have attempted to tabulate the observations in this series with the object of learning, if possible, whether any particular group of cases showed constant variations in blood-pressure, either within the normal limits or not.

Race.—The patients in the series were of many different nationalities as follows:

American	159	Russian	16
Jewish	81	Scotch	12
Canadian	47	Swedish	7
Irish	43	Italian	7
English	20	German	6
Colored	19		

The remainder were either divided in small numbers among many different races or the nationality was not given. The examination of the records shows, as would be expected, that there are no characteristic variations in blood-pressure in the different nations.

Age of Patients.—The patients ranged from 16 to 45 years of age. Sixty-seven were under 20 years of age; 271 between 20 and 30; 80 between 30 and 40, and 7 were over 40. The age of 15 patients is not given. In line with the fact that the blood-pressure is apt to be considerably elevated in persons of above 50 years of age in whom arterial changes are common, it seemed fair to expect that a rise in arterial tension might be expected in the women in the latter part of the child-bearing period. Contrary to expectations there was no such tendency evident on examination of the records. On the contrary, in the one case of eclampsia which occurred during pregnancy the patient was only 18 years old. It is, therefore, fair to assume that in women during the child-bearing period a high blood-pressure is due to some individual peculiarity or disease and is not to be expected. The more or less constant rise in pressure which is observed in later life seems, therefore, to begin at or after the menopause and is evident during the child-bearing period.

Number of Pregnancies.—In this series there were 218 primi-parae; 99 II-parae; 46 III-parae; 34 IV-parae; 17 V-parae; 9 each VI-, VII- and VIII-parae; 5 IX-parae, and 4 who had had ten or more pregnancies. It might well be expected that the increased strain thrown on the whole organism by repeated pregnancies would be reflected by a rise in pressure to a greater or less degree, but the observations made on these patients show no constant change, two of the three women in their twelfth pregnancy having a blood-pressure of 120 or less throughout. In studying the series as a whole, however, it would seem that after the second pregnancy there is a slight tendency upward in the pressures. This tendency is not sufficiently marked to be significant. The average in the seventh pregnancy as compared with the first is between five and ten points higher. In other words, it would seem that repeated pregnancies, in the absence of complications, have little or no effect in producing an increase in arterial tension, and that in the absence of complications a normal pressure is to be expected in a pregnant woman irrespective of her age or the number of the pregnancy.

Relation Between Albuminuria and High Blood-Pressure.—The urine was examined for albumin in conjunction with the estimation of the blood-pressure. The specimens examined, however, were not catheter specimens, and, as is well known, albumin is found much more frequently in non-catheter specimens, some observers placing it as high as 40 per cent.

In this series 50, or about 11 per cent., showed albumin at one or more examinations, an extremely low percentage, but since the urine was only examined by an expert when large traces of albumin were present or when other symptoms developed, it seems probable that small traces may have been overlooked, and the percentage really may have been considerably higher. In 37 of the 50 cases the albumin was found at one examination only and the blood-pressure showed no change, nor did other symptoms develop. In 2 cases the albuminuria was more persistent but no other symptoms developed. In 11 cases the presence of albumin was accompanied by a rise of blood-pressure to over 130, in 5 of which patients the albumin disappeared and the pressure dropped as soon as appropriate treatment was instituted.

In the six others the albumin and high pressure persisted until after delivery. Four of these patients also developed other definite symptoms of toxemia, but spontaneous labor ensued, with relief before the more serious symptoms developed. In one patient only did convulsions occur and this patient made a good recovery on being delivered. This patient had a persistently high pressure for the six weeks she was under observation, but the albumin did not appear till eight days before delivery, from which time it increased rapidly in amount, the blood-pressure rising to 195 shortly before the convulsions developed.

Another patient had a blood-pressure of from 150 to 180 for a month before delivery, with a slight amount of albumin constantly present. She did not develop convulsions, but gave birth to feeble twins at seven months, one of which lived only a few hours. One patient referred to previously had postpartum convulsions, no abnormality having been noted during the four and one-half months she was under observation. Six patients ran a persistently high pressure of between 135 and 145, but at no time showed any other symptoms and were delivered safely. With one exception all of the patients who developed toxemic symptoms showed a rising blood-pressure as the first symptom, but in one case the appearance of albumin preceded the rise in pressure. Although the number of cases is too small to form the basis of any definite conclusions this would point to the conclusion that a rise in blood-pressure even in the absence of other symptoms should receive serious consideration as possibly being the initial symptom of an impending toxemia.

Results.—In the 450 cases there were four maternal deaths following delivery. One patient died of pneumonia; one of hemorrhage from placenta praevia; one of heart disease, and one of septic infection. Neither the blood-pressure nor urinary examination showed anything abnormal in any of these women.

There were nine still births in the series. Four were due to difficult operative delivery; two to placenta praevia, and one each to premature detachment of the placenta, congenital syphilis, and fetal monstrosity. In each case the pregnancy was normal as far as shown by the urine and blood-pressure.

There were four premature births, and three of the babies died, one at 7 and two at 8 months. In two of these cases the mother showed an abnormally high blood-pressure, one of the patients developing a definite toxemia, though without convulsions, the maternal condition accounting directly for the death of the child.

CONCLUSIONS

The study of the records of these cases shows definitely that a considerable number of patients have a temporary rise in blood-pressure during pregnancy without the development of other symptoms, as is found in patients under other conditions. The significance of this rise in blood-pressure can only be ascertained by a frequent study of the blood-pressure in a large number of cases. In other cases the rise in blood-presure was followed by the appearance of albumin, a combination of which has been shown to be a definite indication of the development of toxemia. In only one case, however, did convulsions develop, the other cases yielding to treatment. Thirty-nine cases showed slight traces of albumin in the urine, but no changes in the blood-pressure. As the urine was not obtained by catheter, the source of the albumin is unknown, but in the majority of the cases it was probably due to contamination of the urine by leukorrheal discharge. To judge from these cases, the presence of a slight amount of albumin, if not accompanied by a rise in blood-pressure, is negligible. Eleven patients showed albumin with a high blood-pressure, all of these being presumably more or less toxemic. Five patients showed a blood-pressure of 140 or over throughout the period during which they were under observation. Only one of these patients developed albumin at any time during the pregnancy and all passed through labor normally, which would tend to prove that persistent high blood-pressure, in the absence of other signs, is not necessarily a dangerous symptom, although it should always arouse suspicion and call for increased watchfulness, whereas, as was shown in other cases in this series, a rise in blood-pressure from a low point is not infrequently followed by the appearance of albumin and the development of symptoms of toxemia, and is more significant than a high pressure throughout.

HYPOPITUITARISM IN CHRONIC HYDROCEPHALUS

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Disorders of pituitary metabolism may be due to disturbances of the gland itself, organic or functional, as tumors, hyperplasia, hypoplasia, etc., or such changes may be the result of remote factors, such as distant tumors pressing on the gland, and hydrocephalus. In severe hydrocephalus, the third as well as the other ventricles is distended with fluid; it becomes cystic, bulges, and presses on the underlying pituitary gland.

The disturbance of pituitary function resulting from hydrocephalus may manifest itself in two conditions, hyperpituitarism (Neurath, Cushing, Oppenheim), or in hypopituitarism. In view of the frequency of dyspituitarism in chronic hydrocephalus, the literature on the subject is astonishingly scarce.

Marinesco and M. Goldstein,[1] in December, 1909, and Kurt Goldstein,[2] in 1910, described the clinical picture of pituitary body disease as an accompaniment of hydrocephalus. Kurt Goldstein calls attention to the fact that changes in the sella turcica have been noted in cases of chronic hydrocephalus in the cases of Schüller, broadened and flattened, of Fermröhr, a widened entrance, and of Oppenheim, a very deep groove. He further states that in a careful search of the literature he has found cases of chronic hydrocephalus presenting isolated symptoms which were probably similar in character to the symptoms observed in his own cases, namely, obesity (Quincke), amenorrhea (Jollye) and hypoplasia of the uterus and amenorrhea (Moore). Seivert reported two cases which Goldstein states are similar to those reported by himself; two sisters, aged 9 and 15 years, both of whom were fat, had optic atrophy and hydrocephalus, but no genital atrophy. Goldstein reports three cases, in all of which enlargement of the head was associated with a very fat body and undeveloped genitalia; the second patient had some symptoms of bony overgrowth shown by separation of his teeth and enlargement of the ends of his bones. In no case was a necropsy obtained. He makes the diagnosis of meningitis serosa by virtue of the long duration, the remissions, the absence of focal symptoms and the presence of concentric diminution of the field of vision without hemianopsia. He further asks if it is not possible to obtain the symptom complex ordinarily accompanying tumor of the hypophysis from pressure on the hypophysis by an increased amount of cerebrospinal fluid.

Mueller[3] reports a case of tumor of the posterior fossa with secondary hydrocephalus in a girl aged 16 years who showed arrested menstruation, small stature and abundant adipose tissue.

Marinesco and Goldstein report two cases with necropsy, one, that of a boy of 15, who, besides the symptoms of a cerebellar neoplasm, showed enlargement of the head, marked adiposity, hypoplasia of the genital organs, no hair in the axillae or on the pubes. Necropsy showed a cystic tumor of the cerebellum with secondary hydrocephalus, a compressed pituitary body and a broadened-out sella turcica. The second case, that of a girl aged 16, showed a large head, marked adipose deposits, scanty hair, menstruation every three or four months, and small mammae. Necropsy showed chronic hydrocephalus and no new growth of the pituitary body.

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[1] Marinesco and Goldstein, M.: Two Cases of Hydrocephalus with Generalized Adiposity, Nouvelle Iconographie de la Salpêtrière, 1909, xxii, 628.

[2] Goldstein, Kurt: Meningitis Serosa unter dem Bilde hypophysärer Erkrankung, Arch. f. Psychiat. u. Nervenkrankh., 1910, xlvii, 126.

[3] Mueller, quoted by Marinesco and Goldstein (Footnote 1).

Cushing[4] remarks on the scarcity of literature and calls attention to twenty preadolescents with tumor cerebelli and chronic hydrocephalus, all being well nourished, and many quite adipose. He likewise reports one case of essential hydrocephalus with hypopituitarism, one case of cerebellar cyst with hydrocephalus and hypopituitarism and one case of endothelioma of the right hemisphere, hydrops of the third ventricle and hypopituitarism, all with necropsy.

He mentions six illustrations of the syndrome of hypopituitarism in chronic hydrocephalus reported by Babonneiux and Poisseau.

Oppenheim[5] states that he has seen two cases of cerebellar cysts with secondary hydrocephalus causing symptoms of acromegaly.

I[6] have reported one case of hypopituitarism in chronic hydrocephalus with necropsy. Because of the inaccessibility of the bulletin wherein it was published, this case will be described along with the others here reported.

The frequency of dyspituitarism in chronic hydrocephalus may be shown by the fact that since the publication of the foregoing report in 1913, twelve additional cases have been observed, ten in institutions and two in private practice. Of these, three will be briefly described.

In all the cases, adiposity was the predominating feature, ranging from that of an overnourished person to that of a monstrosity. Genital hypoplasia was observed but once; all the cases show a delicate, pudgy, tapering hand with broad base. Increased carbohydrate tolerance was found in all of six cases so studied. Not much importance can be attached to this particular feature, inasmuch as it is observed in many conditions and is not well understood. Thermic reaction following the injection of extract of anterior lobe (kindly furnished by Armour & Co.) was observed in none of six cases so tested.

REPORT OF CASES

Case 1.—*History*.—S. D., man, single, no occupation, aged 40, was admitted to the Kankakee State Hospital, Nov. 1, 1905. The family history shows that the patient's father died of "paralysis," probably apoplexy; his mother of hemorrhage of the bowels. There is one brother living and well, and there were three sisters, two of whom are dead from unknown causes. Circumstances of the patient's birth are unknown. At the age of 4 months he developed "cerebrospinal meningitis" and was ill for several months; the condition was associated with opisthotonos and followed by spasmus nutans. After recovery, it was noted that the patient was deaf; he did not walk until he was 9 years old. Mentally he did not develop more than the equivalent of 7 years. At 15 he was taken to the Illinois State School for Deaf Mutes at Jacksonville. He was returned to his home at the end of eight months on account of his inability to learn. It was noted that while a young man he was fat, that his head was somewhat large, that the penis was very small and at the age of 18 the testicles "apparently disappeared." This condition was explained by the relatives as being the result of their being hidden by the excess of fat. He did not develop hair as did other men. A tin-type taken at age 18 shows a very fat boy with a large head. He had never complained of headache, nor did he vomit.

Examination.—On admission to the Kankakee State Hospital, examination showed a man, aged 40, weight 278 pounds, height 5 feet 6 inches. He was very fleshy; the skin was soft and moist, the mucous membranes red and muscles flabby. The hair on the head was dark and thin. In the axillae the hair was sparse and very thin over the pubes. The abdominal wall was protuberant. There was a moderate umbilical hernia and so large an amount of fat that the abdomen hung over the thighs like an apron, concealing the penis. The head was large and hydrocephalic, the tongue negative. Several teeth were missing. Examination of the chest showed the lungs to be negative. Heart action was rapid, the first sound loud. Abdomen showed dilated colon. The genitalia were notable for the atrophic penis and partially descended testicles. The penis was about 1¼ inches long, small in caliber, hidden by fat. Reflexes, deep and superficial, were normal. Pupillary reflexes were normal.

In this case, therefore, the notable features are hydrocephalus, adiposity, lack of hair and genital atrophy. The patient was quiet and tractable, possessed little memory, performed very few functions and even needed assistance in feeding. He was untidy, soiling and wetting himself, and made no effort to attend to the calls of nature. He frequently laughed loudly without cause and took no interest in his surroundings.

Aside from the steady decrease in weight there was noted no change in the condition of the patient after admission. There was no gross change in vision, but he became more and more unsteady in his gait. He was found dead in bed, Oct. 25, 1911.

Necropsy.—Post-mortem examination revealed an umbilical hernia, dilated colon with displacement upward of the thoracic contents, edema of the lungs, moderate general arteriosclerosis, fatty degeneration of the liver, chronic parenchymatous nephritis, colloid goiter, general adiposity, partially descended testicles and an infantile penis. The ossicles of the ear were quite small.

The skull and brain deserve more extended description. The calvarium was easily removed, and showed a marked thinning, each convolution of the brain being lodged in a groove of the skull. When held to the light the places marked by the grooves were found to be exceedingly thin. The dura mater did not bulge and was not adherent to the calvarium; it was quite thin but somewhat opaque.

On removal of the calvarium a large amount of cerebrospinal fluid was observed to be escaping from the brain, and as it was released at the base there was seen a small opening, the size of a pea, in the right orbital lobe from which spurted a clear fluid, of which there was apparently about 20 ounces. As this fluid escaped both sides of the brain collapsed, resulting in a mushroom-like appearance. When the brain was removed it was seen that there was a chronic hydrocephalus which affected all the horns of the lateral ventricles and the third ventricle as well. The latter by its distention produced a cyst-like formation above the optic commissure which was pushed downward and flattened. With the exception of the pituitary body, which was implanted on a very broad and bulging infundibulum, the structures in the interpeduncular space could *not* be seen. (The pituitary body itself was flattened from the pressure above it and was very difficult to remove from the sella turcica, which was broadened.) The cyst-like formation of the third ventricle extended backward to the crura, and on its sides were seen the third nerves. The convolutions were somewhat flattened throughout. The meninges were slightly edematous, the vessels somewhat injected.

After hardening and cutting of the brain into coronal sections it was seen that anteriorly the hydrocephalus was very marked, the brain tissues surrounding the cavity being but 1.5 cm. thick. A section in front of the optic commissure showed the foramen of Monro to be the size of a quarter, the third ventricle was distended to the size of a large walnut, the pillars of the fornix being exceedingly thin and membrane-like. The corpora albicantia were seen in the floor of the third ventricle, but did not make their appearance at the base of the brain. Above this was seen the septum lucidum, which was 3 inches long, 2½ high, and showed marked separation of its two walls, each of which was a delicate membrane with numerous fenestrae. Above this the body of the corpus callosum was very thin and posteriorly, membrane-like and ruptured. The splenium of the corpus callosum was likewise very thin. A section posterior to the midbrain when viewed in its anterior portion presented a broad fornix with the choroid plexus lying on it, which was in general appearance normal. As this was followed down, the hippocampus was seen sharply outlined in the floor of the markedly distended descending horn. The internal capsule with its adjacent ganglia was noted lying free in the cavity of the lateral ventricle on the superior and posterior surfaces, while inferiorly it was seen to be continuous with the midbrain. The ganglia were smaller than usual and flattened from above downward. The fourth ventricle showed a slight amount of distention and the floor was somewhat granular. The central canal of the spinal cord was negative. The pineal gland was compressed, its anterior surface forming a portion of the wall of the distended third ventricle. When removed a marked concavity was noted on its surface.

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[4] Cushing, Harvey: The Pituitary Body and Its Disorders, Philadelphia, J. B. Lippincott Company, 1912, p. 202.

[5] Oppenheim, H.: Text Book of Nervous Diseases, *1911*, p. 1380.

[6] Pollock, L. J.: Chronic Hydrocephalus with Dyspituitarism, Inst. Quart., 1913, iv, 67.

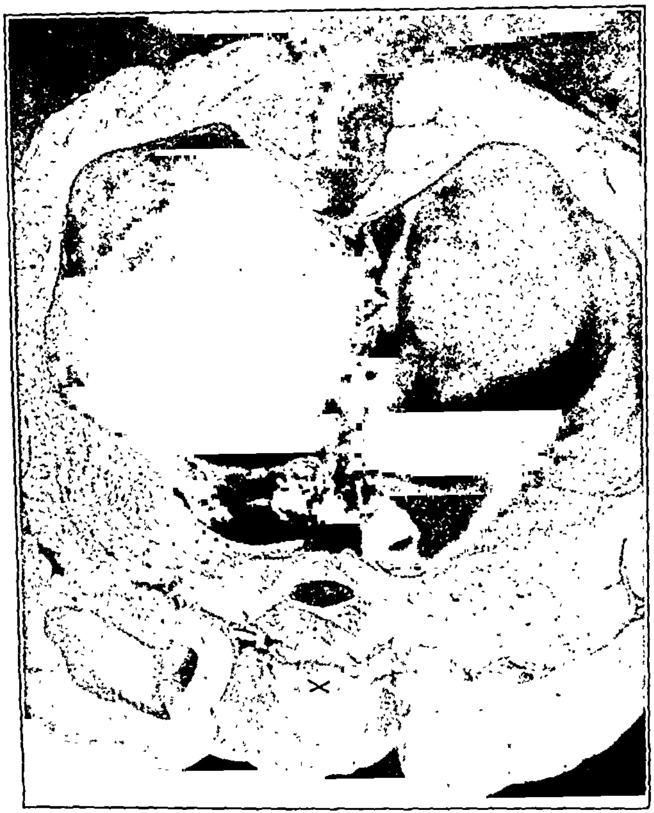

Fig. 1.—Pituitary gland (*x*) beneath the floor of the cystic third ventricle.

Microscopically the findings bear out the gross diagnosis, and only the pituitary body and pineal gland will be described. The pituitary body was flat and the posterior lobe showed an increase of connective tissue. The anterior lobe showed that the part adjacent to the posterior lobe was composed almost entirely of nuclei within cells showing very little protoplasm and no chromophilic granules. These nuclei showed various granules of degeneration; some were distorted, others large, swollen and quite pale; here and there was found a large chromophilic cell. In the remaining portion of the gland, the cells were somewhat crowded, the chromophilic cells being abundant. An increased amount of connective tissue was noted and here and there a small collection of colloid material. The pineal gland was crescentic in shape. There was a marked increase of connective tissue surrounding it. The interior of the gland was divided into compartments in which were seen numerous nuclei contained in cells with little protoplasm, resembling glia cells. Very little gland formation was seen. No ganglion cells were present. In several of the parts of the gland were seen masses of colloid material and in the center a mass which had become calcified (Fig. 1).

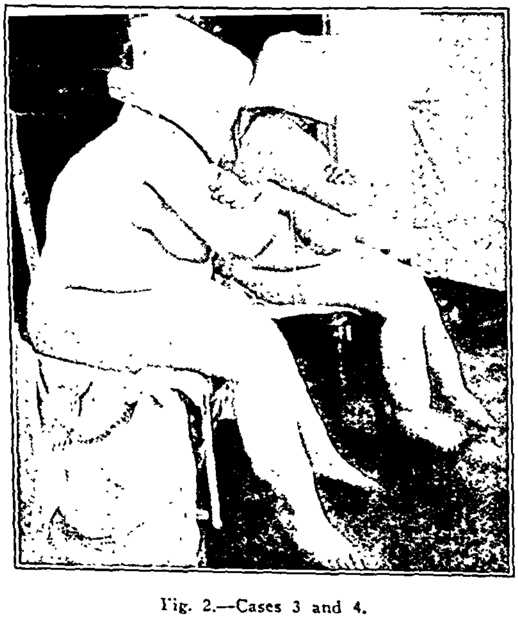

Fig. 2.—Cases 3 and 4.

CASE 2.—Girl, aged 11, height 4 feet 8 inches, weight 127 pounds, an overdeveloped, very obese child with tapering hands; was an idiot who could not talk; the pubic hair was well developed. Roentgenoscopy revealed a normal sella turcica, but a hydrocephalic skull.

CASE 3.— Woman, aged 19, had an attack of meningitis at age of 7 weeks, and has never walked or talked. She has a marked hydrocephalus and spastic diplegia. She has atypical epileptiform attacks, is very obese and has tapering hands. Menstruation is irregular.

CASE 4.—Woman, aged 25, has a marked hydrocephalus. She is an idiot with spastic diplegia, is exceedingly obese and has tapering hands. Menstruation is irregular (Fig. 2).

The specificity of the symptom of adiposity, described as associated with pituitary disease, is not well established. Marburg[7] first formulated the theory that adiposity is present not only in tumors of the pituitary, but in "certain cases of cerebral tumor of embryonic type and of ectodermal structure which cause adiposity, independently of their localization, by virtue of a specific internal secretion." That this is not entirely true is shown by the cases exhibiting pressure on the pituitary from hydrocephalus without tumor, and from tumors of the pineal gland not teratomatous in nature, as in the cases of Nothnagel, Mueller, Pearce Bailey and Smith Ely Jelliffe. Marburg[8] subsequently, in a study of tumor of the pineal gland and metabolic symptoms, described a tumor of the pineal gland associated with hydrocephalus but in which the pituitary was not disturbed, although infundibular hydrocephalus was present. He formulates three groups of pineal gland disturbances:

1. Hyperpinealism — obesity.
2. Hypopinealism — genital atrophy.
3. Apinealism — cachexia.

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[7] Marburg, quoted by Marinesco and Goldstein (Footnote 1).

[8] Marburg: Zur Kenntnis der normalen und pathologischen Histologie der Zirbeldruse, die Adipositas Cerebralis, Wiener med. Wchnschr., 1908, lviii, 2617.

In a recent article on tumors of the pineal gland, Pearce Bailey and Smith Ely Jelliffe[9] give an exhaustive summary of the literature, in which they collect sixty cases.

It is notable that of sixty cases, thirty showed hydrocephalus, usually marked; of ten cases showing evidence of adiposity, in nine there is mention of hydrocephalus; in one of the other two (Marburg, mentioned above) there was no change in the pituitary. In the other case (Daly) no mention is made of hydrocephalus. The authors state that "the whole situation is in need of more extended study to determine whether pineal tumors alone can produce adiposity, apart from third ventricle hydrocephalus." Speaking of the accompanying hydrocephalus, which is "usually very marked in the third ventricle, and the infundibulum may be swollen and puffed out like a cyst," they state that "such a hydrocephalus can unquestionably lead to adiposis."

From the case here recorded as coming to necropsy no conclusion relative to the cause of the adiposity can be made, inasmuch as not only was the hypophysis compressed, but the pineal gland as well showed disturbances resulting from the dilatation of the third ventricle.

CONCLUSION

I wish to state that the purpose of this report is simply to call attention to the frequency of the association of hypopituitarism with hydrocephalus and by a few illustrations recall to memory many similar cases observed by all physicians.

The similarity of serous meningitis to tumor cerebri is well known and the inclusion of pituitary symptoms may lead to a diagnosis of tumor of the hypophysis, wrongly. The involvement of the pineal gland in the mechanical injury resulting from a cystic third ventricle deserves further study in its relation to cerebral adiposity.

I wish to express my thanks to the State Board of Administration of the State of Illinois for their kind cooperation in enabling me to observe some of the cases.

25 East Washington Street.

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[9] Bailey, Pearce, and Jelliffe, Smith Ely: Tumors of the Pineal Body, Arch. Int. Med., December, 1911, p. 851.

Value of Statistics.—Statistics have suffered in reputation because of the seeming truth of the trite statement that one can prove anything by figures. In reality figures are but evidence upon which conclusions may be based. If the evidence is faulty and the faults are not perceived, errors in judgment may result. *But this is true of all evidence upon which opinions are based and is no more true of figures and statistics than it is of other kinds of evidence.—Trask.*

HIBBS' OSTEOPLASTIC OPERATION FOR POTT'S DISEASE *

A REPORT OF CLINICAL OBSERVATIONS WITH RESULTS IN ONE HUNDRED AND FIFTY-EIGHT CASES, AND INTERPRETATION OF EXPERIMENTAL STUDIES IN ANIMALS

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About half a century ago Taylor and Sayre demonstrated the principles of mechanical support in the treatment of Pott's disease. Since that time the routine has been to apply, in the case of ambulatory patients, either a Taylor spinal assistant or a plaster-of-Paris jacket. More recently a Bradford or Whitman frame has been employed whenever the recumbent position was indicated. While these forms of treatment have resulted in a large percentage of cures, they have confessedly left much to be desired. Even the best apparatus is cumbersome and needs constant supervision; and in most cases only imperfect results can be obtained even after years of tedious treatment. In no branch of surgery, perhaps, is the social status of the patient in such close relationship to the possibility of cure. Among the well-to-do tuberculous lesions in the cervical and lumbar regions can be dealt with in a fairly satisfactory manner. The repair, however, of similar lesions in the dorsal region is usually a failure anatomically, although functionally good, because of the impossibility of immobilization. If such is the case under satisfactory social conditions, how much more unfavorable is the outlook for the poor dispensary patient! General recognition of these facts has led a number of men to attempt operative treatment of Pott's disease.

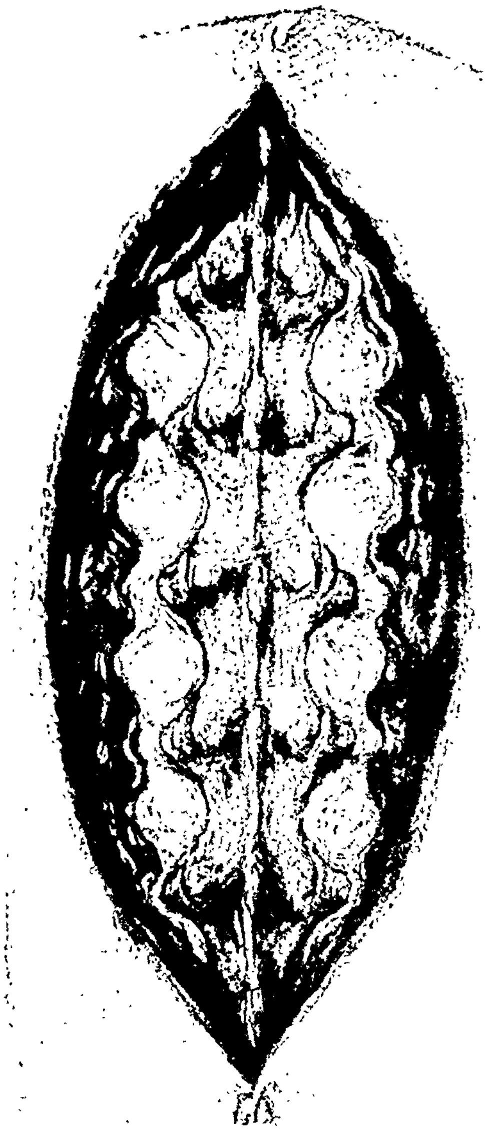

Fig. 1.—The spines and the posterior aspect of the vertebrae are stripped of periosteum, which is shown in circular white areas. The spines have not as yet been cut and imbricated.

Prior to 1908 no definite results were obtained, but in that year F. Lange implanted two tin-plated wire splints with bulbous ends beneath the muscles over the diseased area. These lay on either side of the spinous processes, their ends being attached to them by a silk suture. Two years later[1] the symptoms had subsided, deformity had not increased, and the splints had remained in place.

It has long been known from studies on the healed kyphos that in many instances a fusion of the posterior aspect of the vertebrae through the laminae and spinous processes is the method by which Nature effects repair. Herein, *obviously*, is the key to the situation. If the surgeon could in a few weeks cause the fusion which it took Nature months or years to bring about, he could not well fail to stay the course of the disease and limit the deformity. Thus considered, the question became simply one of determining the best technic for causing arthrodesis of the lateral *articulations* and bridging the intervertebral spaces, thereby fusing the entire dorsal aspect of the vertebrae. Early in the year 1910 it became my privilege to assist Dr. R. A. Hibbs in his studies on the cadaver which led him to devise the technic which experience has shown to be both anatomically satisfactory and surgically acceptable. While it was easily demonstrable that in adult and adolescent life there was always adequate bone *in situ* to make the bridge, it was necessary in the case of very young children to await a verdict which should be based on actual findings at the operating table. It is gratifying to report that adequate bone exists at *all* ages; therefore the use of the autoplastic bone transplant, or any other form of foreign body, is not necessary. The use of such bone transplants had at first been deemed necessary in the case of younger children, but operative experience has demonstrated their uselessness.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* From the New York Orthopedic Dispensary and Hospital, and from the Laboratory of Physiological Surgery, New York University.

* This article is abbreviated by omission of some of the illustrations.

[1] Lange, F.: Jour. Am. Orthop. Assn., November, 1910.

The first account of Hibbs' operation[2] was published in 1911. He also described his method in a paper[3] read before the Section on Surgery of the American Medical Association, at Atlantic City, June, 1912. From this latter paper is taken the author's account of his operation, as follows:

> In performing the operation, a longitudinal incision is made directly over the spinous processes, through skin, supraspinous ligament and periosteum, to the tips of the spinous processes. The periosteum is split over both the upper and lower borders of the spinous processes and the laminae, and stripped back from them to the base of the transverse processes. The spinous processes are then transposed after partial fracture, so that they make contact with fresh bone, the base of each with its own base, and the tips with the base of the next below. The adjacent edges of the laminae being absolutely free from periosteum, a small piece of bone is elevated from the edge of the laminae and placed across the space between them, its free end in contact with the bare bone of the laminae next below it.
>
> The lateral walls of periosteum and the split supraspinous ligament are brought together over these processes by interrupted chromic catgut sutures. The skin wound is closed by silk, and a steel brace applied. Detailed operative and postoperative directions follow.

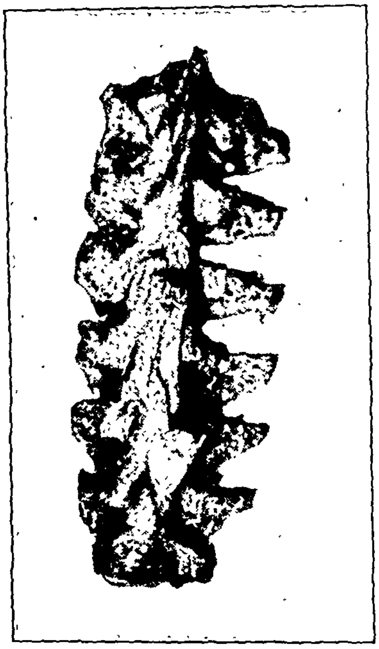

Fig. 8.—Complete fusion after eighty days. The imbricated spinous processes are seen.

The only addition to this technic has been as follows: The lateral articulations are exposed and the cartilage removed by a very small curet. This adds to the extent of the fusion.

We have now had ample opportunity to test the value of this operation. It would be too much of a tax on your time and patience to detail the nearly two hundred cases which have been treated by this method in the New York Orthopedic Hospital; therefore, I will briefly summarize the main features in the cases so treated during the years 1911, 1912 and 1913.

Summary 1911.—There were *twenty-two* cases, ranging in age from 5 years to 25 years; the duration of the disease was from two months to thirteen years; six had formerly worn plaster jackets; sixteen had worn spinal assistants; the range of the deformity was from three to twelve vertebrae; in six cases psoas spasm was observed, psoas abscess in two, and increased reflexes in eight; the number of vertebrae fused varied from five to fourteen.

Summary 1912.—There were seventy-two cases, ranging in age from 3 to 41 years; the duration of the disease was from four weeks to twelve years; six had formerly worn plaster jackets, thirty-seven spinal assistants and one Bradford frame; the range of the deformity was from three to twelve vertebrae; fifteen showed exaggerated reflexes, eight, psoas abscess and nineteen psoas spasm; the extent of the operation varied from five to fourteen vertebrae.

Summary 1913.—There were sixty-four cases, ranging in age from 18 months to 14 years; forty had previously worn spinal assistants, two had undergone bone transplantation from the tibia, and four had previous osteoplastic operations, an insufficient number of vertebrae having been included; the range of the deformity was from six to fourteen vertebrae; in twenty-three cases psoas spasm was observed, psoas abscess in two and increased reflexes in seventeen; the extent of the operation varied from eight to fourteen vertebrae.

Of the 158 patients seven have died, and four required reoperation for the above-mentioned reasons. With these exceptions, the results have been eminently satisfactory, inasmuch as, barring three who were paralyzed when they came to the hospital, all the symptoms of Pott's disease other than the deformity have disappeared; all the patients who have been operated on for a longer period than one year are without apparatus, and are able to carry on the ordinary avocations of life, whether play or business.

Of the seven who died, it should be noted that the cause of death was in every case extrinsic, and not due to the operation. One died one and a half years after the operation; cause of death, miliary tuberculosis; one died six and a half months after the operation, cause of death, tuberculous meningitis; one died sixteen months after operation, cause of death tuberculous meningitis; one died one and a half years after operation, cause of death, miliary tuberculosis; one died a year and ten months after operation, cause of death, tuberculous meningitis; one died three months after operation, cause of death, pyemia, the patient having been infected before he entered the hospital; one died a year after the operation, cause of death miliary tuberculosis.

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[2] Hibbs, R. A.: New York Med. Jour., May 27, 1911.

[3] Hills, R. A.: An Operation for Pott's Disease of the Spine, The Journal A. M. A., Aug. 10, 1912, p. 433.

Necropsy on two of these cases showed, so far as the field of operation was concerned, a complete fusion of laminae and spinous processes from the lateral articulation on one side to the lateral articulation on the other side, the fusing bone mass in both instances being thick, strong and efficient, thereby proving that the operation itself had been perfectly successful.

In the four cases referred to in which reoperation was required, because an insufficient number of vertebrae had been included in the original operation, an incision was made through the old scar, the original field of operation was exposed, and the vertebral fusion present was found complete, but too short. After healthy vertebrae were included both above and below, the results were as satisfactory as in the other cases. The bone production is easily demonstrated by Roentgen ray in most cases, but the chief value of the roentgenograms is as a preoperative guide to indicate the number of vertebrae which should be fused.

The experimental series may be classified as follows:

Dog No.	Date of Operation		Date and Cause of Death	Days Old
172	March	23	March 27, meningitis	4
178	March	25	March 27, shock?	2
177	March	24	March 31, meningitis	7
126	March	22	March 25, shock?	3
127	March	22	March 28, meningitis	6
188	April	1	April 10, meningitis	9
189	April	1	Still living	
175	March	24	March 27, nephritis	3
104	February	5	Still living	
167	March	20	Still living	
166	March	20	Still living	

From the above it appears that the majority of the dogs died either of meningitis or shock. One, however, died of unilateral nephritis, based on autopsy finding.

It is interesting to notice the wide difference in mortality rate between the animal and the human series. For seven dogs the average postoperative life was four and one-half days; the total mortality, in a series of eleven dogs being 72.7 per cent. The cause of this high mortality has not yet been worked out, but as, with two exceptions, the skin wounds healed primarily, the inference is that the operative technic was reasonably clean and that dogs tolerate operative procedure of this nature poorly.

Of the recovered dogs, subjected to euthanasia, two, respectively sixty-two and sixty-eight days postoperative, show that while sufficient bone growth had not taken place to fuse the bridged vertebrae, considerable bone was shown in process of formation. Furthermore, these were undergraduate student preparations in which the fragments were found not to have adhered in a position to insure early fusion of the joints. It may be further noted that lamina-fusion in these animals was not attempted, nor were the lateral articulations disturbed, because of an attempt to reduce the mortality by using a less extensive procedure.

Another specimen, eighty-five days postoperative, shows complete vertebral fusion, while in another, over 100 days, somewhat denser bone deposits exist. One may therefore conclude from animal experiments that osteoplastic operations on the spine of dogs, especially if the laminae and lateral articulations are disturbed, is attended with high mortality, and that terminal bone formation sufficient to fuse the vertebrae and destroy all motion does not occur until after the seventy-fifth day.

Good Legislation.—It is the duty of the government so to legislate as to make it easy to do right and difficult to do wrong.—*Gladstone.*

OBSERVATIONS ON BONE TRANSPLANTATION (ALBEE METHOD) FOR THE CURE OF TUBERCULOUS SPINE DISEASE*

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CHICAGO

Certain principles in the treatment of tuberculous spine disease appear so firmly established that they have been regarded as axiomatic. For 135 years conservatism has been considered the only reasonable and safe course to pursue, whereas it is only recently that operative measures have come into their own in Pott's disease. Hence to replace conservative by operative measures is to run counter to the established conservatism in the treatment of the disease, and naturally there is opposition on the part of those who have not yet accepted radical measures.

In considering the possibilities of cure for Pott's disease by bone transplantation into the split spines of several contiguous vertebrae, or by any other operative method, clinical experience is necessary to form an unbiased opinion of its practical value. At the last session of the *American Medical Association* a paper was presented by the surgeon in charge of the Sea Breeze Hospital, giving his interpretation of the results of fifteen cases of tuberculous spine disease in which operation was performed by the originator of the Albee method at the above-mentioned institution. The report was extremely unfavorable, and the publication of which leads me to present my observations with the hope that other men of experience may carry the discussion farther, thus adding light on a subject of so much importance.

Unquestionably bone transplantation, as advised by Albee, marks a new epoch in the treatment of Pott's disease and is a valuable surgical asset. Surgery shows to better advantage here than in tuberculous joints elsewhere in the body; there is no danger of disseminating the infection into contiguous normal bone; no sacrifice of bone to affect shortening and it is in accordance with orthopedic principles in securing physiologic rest, thereby affecting the pathologic process.

Let it be understood that I do not favor surgical measures in every case of Pott's disease. The value of any plan of treatment in tuberculous spine disease is estimated by its effectiveness in combating ultimate deformity. Under conservative treatment recovery may be anticipated, in an average period of three or four years, with or without deformity, depending often on the region of the spine affected. We know that caries in the middle and upper dorsal region of the spine is frequently associated with great angular protrusion, whereas caries in the cervical or lumbar region, even when extensive, has little or no kyphos. This is explainable by the fact that the superincumbent weight is greatest on the bodies of the vertebrae in the dorsal region because of the normal curve of the spine being concave in front. In childhood, therefore, routine treatment should be protective except, perhaps, in middle and upper dorsal Pott's disease; but in cases in which conservative treatment has been tried and found impossible to control, surgical intervention is then justifiable. In adults operative measures depend on social and ecoonomic conditions. The leisure class is in a position to choose between conservative and operative treatment. On the other hand, the wage earner must regain health in the shortest possible time; therefore, conservative treatment in his case demands a sacrifice justified only by a necessity which I consider no longer exists.

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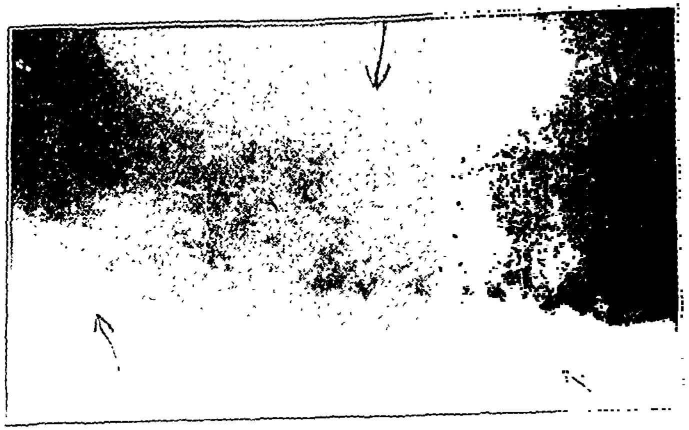
* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

Undoubtedly surgical measures in Pott's disease shorten the period of disability with a presumption of a rapid cure. But rapid cure, in the exact sense, cannot be obtained by any method of treatment in tuberculous spine disease. In comparison to conservative methods, bone transplantation followed by protective treatment shortens the duration of tuberculous spine disease many months. The early relief afforded patients from discomfort and pain following the operation is striking.

It is needless to state that bone transplantation has no direct curative action on the tuberculous process.



Bone transplant extending from first lumbar vertebra to coccyx; bodies of the fourth and fifth lumbar vertebrae destroyed.

The underlying principle is fixation of the vertebrae in order to hold the spine in the extended position so that pressure on the diseased area may be removed, thus arresting and controlling the morbid process. Success thus depends on the efficiency in which the spine is splinted. This is accomplished, primarily, by the bone graft being implanted into the spinous processes of all the diseased vertebrae and at least two contiguous vertebrae on either side. This will effectively splint the spine. A source of failure is almost invariably due to the error of implanting the graft into the contiguous vertebrae of one end only which imperfectly eliminates motion. To obviate this error it is all important that the extent of the diseased area be accurately determined by a good roentgenogram before proceeding to operation. The kyphos alone is not a sufficient guide.

External support, either casts or braces, must not be disregarded for many months following the postopera-

RESULTS OF OPERATION IN NINE CASES OF POTT'S DISEASE

Case	Duration of Disease, Years	Deformity Previous to Operation	Age at Time of Operation, Years	Vertebrae Affected as Shown by X-Ray	Reasons for Operation	Date of Operation	Location of Graft as Shown by X-Ray	Length of Time of Postoperative Recumbency, Months	Length of Time of Postoperative Protective Treatment, Months	Ultimate Results
1............	2⅓	Yes	13	3 to 4 L.	Increasing kyphos	4/13	1 to 5 Lumbar	3	3½	Has no discomfort or pain; lower end of graft stands out prominently; right lateral curve of the spine above the graft.
2............	3	Marked	5	3 to 4 D.	Discomfort and pain on walking	7/13	2 to 5 Dorsal	1½	3	No discomfort nor pain, and walks with ease; kyphos slightly increased.
3............	?	Yes	19	7 to 10 D.	Economic	8/13	5 to 12 Dorsal	2	None	Without symptoms; no increased kyphos.
4............	4	No	7	4 to 5 L.	Pain on walking; discharging sinus.	9/13	1 to 5 Lumbar	2	None	Walks with ease and is without symptoms other than sinus has not closed.
5............	2½	Marked	7	11 to 12 D.	Grunting respiration; increasing kyphos	9/13	9 D. to 3 L.	2	3	Allowed up without any protection, but after one week a cast was applied because of grunting respiration; after three months cast was removed, since which the kyphos has only slightly increased; otherwise without symptoms.
*6............	3	Yes	6	7 and 8 D.	?	4/13	7, 8, 9 D.	2½	None	Four months after operation unable to walk and was placed on Bradford frame.
7............	¼	Slight	20	11 to 12 D.	Discomfort and pain	12/13	10 D. to 5 L.	1½	None	After six weeks, protective treatment became necessary because of a "slight weakness" referred to the abdomen; two months later the cast was removed, and the patient has been without symptoms; no increased kyphos.
8............	1	Yes	32	12 D. to 2 L.	Economic	12/13	10 D. to 4 L.	6	None	Graft became infected and was removed; Roentgen-ray shows beginning bone formation connecting spinous processes.
*9............	3½	Slight	18	6 to 10 D.	Pressure paralysis	3/13	6 to 12 D.	3	1½	Without symptoms for six months following operation; then right knee gradually began to "jerk" and unable to walk; patella reflexes and ankle-clonus much increased; now on Bradford frame.

* Operated on before coming under observation of the author.

tive period of recumbency (six weeks), inasmuch as too early reliance cannot be placed on the strength of the graft. It is improbable that a firm bony union exists between the graft and the split spinous processes in this period of time. Albee, however, states that the graft becomes united by bony union in four weeks. According to Dupuytren and Wieder, there is no permanent callus formation between the ends of the transplant and the bone into which it is to be transplanted before the eighty-fifth to two hundred and fiftieth day.

In the middle and upper dorsal region of the spine, where deformity has developed necessitating a pronounced bending of the bone insert, the strain on the graft is greatest. Unless external support be given, tracings of the spine will almost invariably show an increased, rounded kyphos. In lower dorsal or lumbar Pott's disease the graft is usually straight and the strain is mostly confined to its lower end. Here again it is necessary to use external support; otherwise the lower part of the graft may not remain firmly anchored and then it stands out prominently. I am accustomed to give postoperative protective treatment at least for six months. Clinically no harm can come from too long a protection—other views notwithstanding.

This paper is based on nine cases observed in my private practice and on my services at the Cook County Hospital and the Home for Destitute Crippled Children during the year of 1913. In seven of the cases operation was performed by me and in two (Cases 6 and 9) by other surgeons. No attempt has been made to gather cases for statistics from other sources.

CONCLUSIONS

I feel warranted in stating that:

1. Surgical measures for tuberculous spine disease are a great advance over conservative treatment, but should be restricted to selected cases. Undoubtedly they shorten the period of disability.
2. Not only may existing deformity be prevented from becoming exaggerated, but also deformity itself may be prevented by surgical measures.
3. Too early reliance cannot be placed on the strength of the bone graft. It takes time for the splint to become securely fixed by permanent callus.
4. External support must not be disregarded for many months following the operation; otherwise deformity may ultimately occur.
5. Even with postoperative protective treatment for a period of six or more months, the duration of treatment is much shorter than the average duration under non-operative methods.
6. Success of bone transplantation for the cure of tuberculous spine disease depends on the proper implantation of the bone splint into the diseased and normal contiguous vertebrae. Essential to the success is the *careful protective after-treatment* for a period of months.

I wish to thank Mr. Julius Gillis, private radiologist, and Dr. Edward S. Blaine, radiologist to Cook County Hospital, for their valuable aid with roentgenograms.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FARRELL AND JACOBS

Dr. W. G. Stern, Cleveland: One question cannot be settled by animal experiments, but only by long clinical experience, and that is, can the bones of one human being be permanently transplanted into another? If the bones of one individual can successfully be transplanted to another, we have before us a means of making transplants of even greater extent and scope than the ones already shown. Hoffmeister, in Germany, for sarcoma of the upper end of the humerus, took the fibula of a cadaver and using the external malleolus as the joint-forming body, implanted the other end into the shaft of the humerus. He was able, by means of this long piece of bone, to put the muscles of the arm under great tension; and the result was eminently successful. Reports have been drifting to America, brought by word of mouth, that some of these splendid operations, done by means of transplants from one individual to another, have not been permanently successful. The bones, which apparently healed in and formed a new joint in Lexer's case, later lost their bony character, and after a year or two, could no longer be identified as bone. If this transplantation from one individual to another will succeed, the method offers a promising field in the large hospitals, from material gathered in cases of amputation, etc. I also agree that in the operation of transplantation for the cure of Pott's disease, the graft should extend a fairly long distance above and below the seat of the disease; and that the case should have mechanical support for a long time afterward.

Dr. John B. Murphy, Chicago: It is pleasing to note tha the position that we have taken is being confirmed, that bone of any size, even to that of the longest bone of th anatomy, can be transplanted from one part of an individua to another part and will survive if it be aseptic. The question is not yet settled whether the periosteum and the compact bony tissue or the medulla plays the most importa rôle in the regeneration of bone. It is fairly well establishe that the autotransplant gives the best results. In somethin over one hundred cases of bone transplants of all sizes, fro 14 inches down, we have removed only one transplant. Thi shows the uniformity with which bone can be healed in. I matters little whether the bone is placed on the surface, i the compact bony tissue, or in the medulla. What we ar interested in, and where we feel that work can be done b this section, is in the treatment of malignant and semimalignant lesions of bone by resections in place of amputations. Our great work is going to be that we shall be able t prevent metastasis by early resection of bone and save th extremity. The epiphyses must be preserved when this ca be done, because they are important for the growth of bone That we are not doing for tuberculosis in all portions of th body the best that we can, is definitely settled in my mind We must do more than merely give mechanical support. Great stress has been laid on the advisability of keeping a patient with tuberculosis in activity. I consider that an error; for it lessens the opsonic index in the extremity as well as in the lung. How well satisfied are we with the management of our cases of tuberculosis of the hip on the former orthopedic basis of mobility?

Dr. Joel E. Goldthwait, Boston: The discussion has shown that bone transplants can be inserted in large pieces and that they will not be thrown off. Conservatism in the treatment of malignant bone and joint disease promises, certainly, as much as any other; because Coley's statistics reported a short time ago, showed that life was not prolonged by operation. The disease goes on, in spite of such radical measures. This method of bone transplantation offers an opportunity to do something early, when the patient is willing.

Dr. M. S. Henderson, Rochester, Minn.: I have operated on five patients by Hibbs' method. Clinically, ankylosis was obtained. The most striking case was that of a young man 25 years of age who had a lumbar Pott's with large psoas abscess, but no sinus. After operation the abscess was aspirated, the patient gained 35 pounds and manual labor was resumed. Later he developed acute miliary tuberculosis of the lungs and died. Three other patients were apparently cured. One is too recent to report. I have operated in over thirty cases by the Albee method. We lost no transplants. In those observed long enough after operation to be fair, it would seem that ankylosis was secured. Dr. Murphy emphasizes the practicability of bone transplantation. In something over seventy transplantations we have only lost one graft.

THE SYMPTOMATOLOGY AND TREATMENT OF SEBORRHEIC KERATOSES *

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Few physicians appreciate the important part played by seborrheic keratoses in the pathogenesis of carcinoma of the skin. A material, if not absolutely essential, factor in the etiology of both basocellular and prickle-cell cancer is a peculiar quality of the skin, a quality which may be inherited but is usually acquired, and which is characterized by harshness and dryness, with more or less evidence of long-standing dry seborrhea. In the production of these cutaneous changes, age is an important, but not indispensable, factor. Long-continued exposure to strong sunlight and to sudden atmospheric changes aids in the preparatory process. The custom of applying a local descriptive term to a skin of this kind is unfortunate, for it tends only to confuse the unsophisticated. The so-called "sailor's skin" is by no means confined to those who follow the sea. Typical examples of the condition are probably far more frequent on the plains of Kansas than on the Newfoundland Banks. In discussing the subject of seborrheic, or "senile," keratoses, these facts should be borne in mind, for it is on a skin of this type that the majority of these lesions develop.

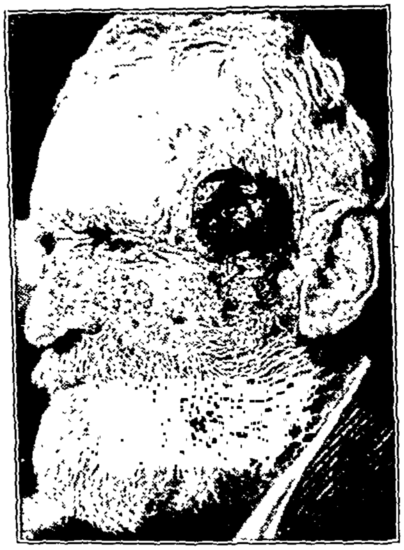

Fig. 1 (Case 4).—Keratoses of the keratoid type, and large prickle-cell carcinoma involving the skin and periosteum.

Clinically, seborrheic keratoses begin as small, round or oval, brownish macules. The sites of predilection are the face, scalp, trunk, particularly the interscapular and sternal regions, and the backs of the hands. When fully developed the growths are flat-topped, papular elevations, usually oval in outline, yellowish, grayish or brownish in color, sharply circumscribed, and covered with a firmly adherent crust which is usually greasy and velvety if the lesions are situated on the trunk or scalp, and harsh, rough and dry if they are located on the face or hands. When the crust is carefully removed its under surface often presents numerous tiny projections which formerly extended into the mouth of the follicles. Not infrequently the location of an involved area is apparently dependent on some preceding slight injury of the skin, such as a nick from a razor while shaving. The tumors never disappear spontaneously, and may persist indefinitely without change, but generally, and especially in those instances in which the growths are exposed to constant or repeated irritation of any sort, the bases of some of them undergo further pathologic change and ultimately become malignant, the resulting carcinomas invariably being of the prickle-cell type.

The histopathology of seborrheic keratoses has long been a matter of controversy. Neumann[1] found thinning and pigmentation of the prickle layer, atrophy of the derma, and hypertrophy of the sebaceous elements, with cystic changes in the hair follicles and their appended glands. Balzer[2] reported the granular layer and stratum lucidum unaffected, the presence of a decided acanthosis, hypertrophy of the stratum corneum, and enlargement of the papillae, with some perivascular infiltration. Otherwise the cutis was normal. Handford[3] found acanthosis, with associated hypertrophy of the horny layer, and there were present throughout the epidermis numerous round and oval spaces, the walls of which were lined with cubical epithelium. Pollitzer,[4] who was first to investigate the condition thoroughly, studied sections from a considerable number of lesions, some of which had been excised from a patient suffering with mycosis fungoides. He found the papillae enlarged and elongated, and containing many epithelioid cells, the majority of which were arranged alongside and parallel to the capillaries. The vessels themselves were unchanged, and the elastic fibers and sebaceous glands also were normal. There was hypertrophy of the prickle layer, with parakeratosis of the stratum corneum. The follicular orifices were filled with horny substance. The coil gland ducts were dilated and cystic, many of the cavities containing large numbers of leukocytes and degenerated epithelial cells. There was much free fat in the cutis and in the interspinal spaces of the prickle layer. Unna[5] examined a series of the growths secured post mortem from eight cases of the disease. The findings were very similar in all, and he concluded that the lesions were true soft nevi which had undergone a peculiar form of fatty degeneration, and differed from ordinary soft nevi only in their containing more fat. Hartzell[6] has recently gone thoroughly into the subject. He found in all of his specimens:

> A marked increase in the thickening of the corneous layer of the epidermis, the nuclei of the cells being still present as fairly well-stained, slender spindles. The greatest increase in thickness was about the mouths of the hair follicles and the sweat ducts, the former being widely dilated and filled with horny plugs. The granular layer had in most places disappeared, but was still well preserved about the hair follicles and sweat ducts. The rete mucosum presented considerable variation in the amount of alteration present. In the newer lesions there was but slight increase in the width of this layer, although there was always evidence of increased cell activity in the basal cells, such as numerous dividing cells and multiplication of nuclei. In the older lesions there were all degrees of increase in the thickness of the rete up to actual invasion of the corium and beginning epithelioma. In a small lesion removed from one of the patients who also had multiple epithelioma, there was a circumscribed down-growth of the rete surrounded and penetrated by a cellular infiltrate composed of numerous mononuclear leukocytes, and in the corium a moderate number of plasma and mast cells. With the exception of a decided flattening out, and in some cases the complete disap-

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* Read before the Kansas City Pathological Club, Oct. 14, 1914.

[1] Neumann: Atlas der Hautkrankheiten, cited by Unna: Histopathology of the Diseases of the Skin, Walker's translation, New York, 1896, p. 1164.

[2] Balzer: Ann. de dermat. et de syph., 1881, p. 535.

[3] Handford: Illust. Med. News, 1888, p. 293.

[4] Pollitzer: Monatsh. f. prakt. Dermat., 1890, p. 145.

[5] Unna (Footnote 1).

[6] Hartzell: Jour. Cutan. Dis., 1903, p. 393.

pearance of the papillae, the corium presented but little alteration.

It is difficult to reconcile the conclusions of these various investigators. Inasmuch as all were skilled and experienced observers, the disparity of the pathologic reports would indicate that the question is as yet an unsettled one.

I first became particularly interested in the condition about two years ago, and since that time I have endeavored to secure some material from every case of seborrheic keratosis that came under my care. The disorder is a common one in the Middle West, but unfortunately the general public has not yet become educated in the matter of biopsies; consequently I have been able to secure only thirty-four pieces of tissue from thirty-one different individuals, all of whom were private patients.

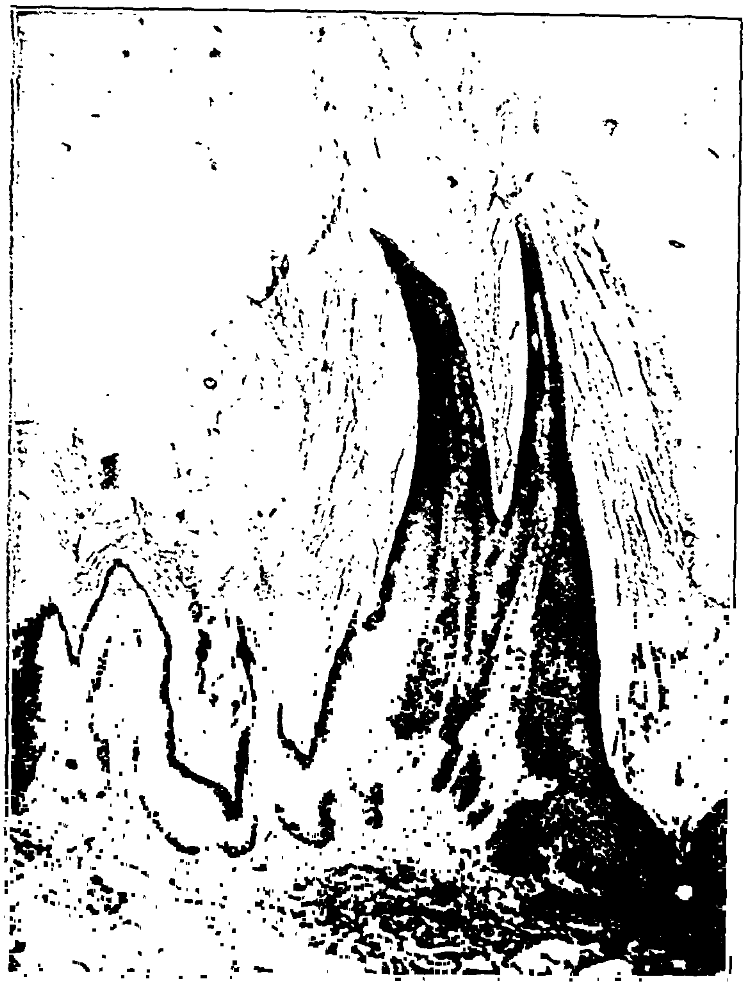

Fig. 2 (Case 7).—Seborrheic keratosis of the verrucose type, showing hyperkeratosis, acanthosis and inflammatory changes in the derma (Leitz, No. 3 objective, No. 4 eyepiece, 20 cm. bellows extension).

A brief summary of the case histories may be of interest:

Case 1.—Retired farmer, married, aged 61, referred by Dr. J. N. Goodson of Kansas City. Lesions on face and trunk. Carcinoma beneath right eye. One growth excised from right temporal region.

Case 2.—Commercial traveler, married, aged 56. Lesions on face and back. One growth excised from left cheek.

Case 3.—Widow, aged 64, referred by Dr. Elmer Twyman of Independence, Mo. Lesions on face, scalp and back. Carcinoma near inner canthus of left eye, involving lid and the left side of nose. One growth excised from forehead, near hair margin.

Case 4.—Farmer, married, aged 69. Numerous lesions on face and trunk. Large carcinoma on left temple (Fig. 1). One growth excised from left cheek.

Case 5.—Lawyer, married, aged 63, referred by Dr. W. M. L. Witter of Milan, Mo. Lesions on face and back. One growth excised from region of right temple.

Case 6.—House painter, single, aged 26, referred by Dr. Edward Asbell of Kansas City, Kan. Lesions on face and trunk. One growth excised from region of right scapula.

Case 7.—Housewife, aged 49, referred by Dr. Jabez N. Jackson of Kansas City. One lesion on scalp, just above right temple. Growth excised (Fig. 2).

Case 8.—Farmer, married, aged 67, referred by Dr. J. Archie Robertson of Kansas City. Numerous lesions on face. One growth excised from left cheek (Fig. 3).

Case 9.—Ranchman, single, aged 48. Numerous lesions on face and trunk. Carcinoma on right side of nose (Fig. 4). One growth excised from right cheek.

Case 10.—Widow, housewife, aged 58, referred by Dr. Sam T. Mead of Slater, Mo. Lesions on face and scalp. One growth excised from right side of forehead, near hair margin.

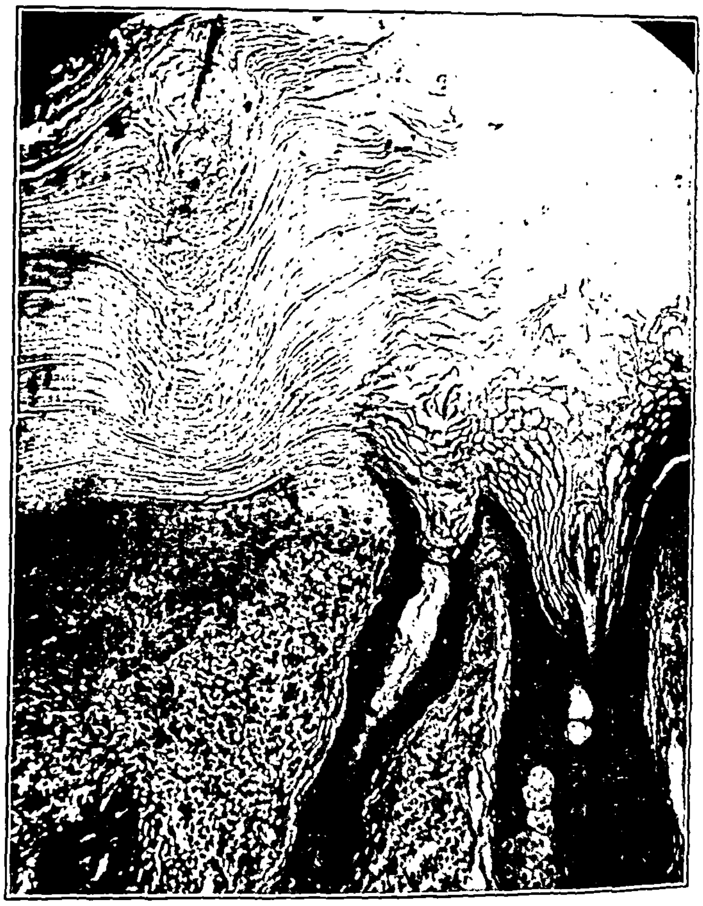

Fig. 3 (Case 8).—A typical keratoid lesion, showing horny plugs in mouths of follicles, hyperkeratosis, slight papillary flattening, and beginning inflammatory changes in derma (Leitz, No. 3 objective, No. 4 eyepiece, 20 cm. bellows extension).

Case 11.—Engineer, single, aged 26, referred by Dr. C. D. Trask of Kansas City. Lesions on face and ears. One growth excised from upper border of left ear.

Case 12.—Rural mail carrier, married, aged 43, referred by Dr. T. S. Blakesley of Kansas City. Numerous lesions on face and one on ball of left eye (Fig. 5). Diagnosis made, and growth excised from eye by Dr. Blakesley.

Case 13.—Physician, married, aged 56, referred by Dr. Roger Brewster of Kansas City. Numerous lesions on trunk (Fig. 6). Two growths excised from scapular and interscapular regions.

Case 14.—Oil operator, married, aged 34, referred by Dr. Frank J. Hall of Kansas City. Lesions on nose, forehead and trunk. One growth excised from side of nose.

Case 15.—Commercial traveler, married, aged 47, referred by Dr. W. T. Reynolds of Kansas City. Numerous lesions on trunk. Two growths excised from left scapular region.

Case 16.—Widow, aged 44, referred by Dr. W. T. Shelton of Kansas City. Lesions on nose and forehead. Carcinoma on right side of nose. One growth excised from forehead.

CASE 17.—Farmer, married, aged 32, referred by Dr. Peterson of Nashua, Mo. Lesions on trunk and left ear. One growth excised from left scapular region.

CASE 18.—Retired teacher, widower, aged 73. Lesions on face, ears and trunk (Fig. 7). One growth excised from left cheek (Fig. 8).

CASE 19.—Farmer, married, aged 43, referred by Dr. W. C. Lathrop of Norton, Kan. Numerous lesions on face and forehead. One brother similarly affected. One carcinoma beneath right eye, and one on right cheek. One growth excised from forehead.

CASE 20.—Electrical foreman, married, aged 27, referred by Dr. Frank Teachenor of Kansas City. Lesions on trunk. One growth excised from left lumbar region (Fig. 9).

CASE 21.—Street-car conductor, married, aged 45, referred by Dr. Will Iuen of Kansas City. Lesions on face and trunk. One brother similarly affected. One growth excised from left side of chin.

CASE 22.—Widow, aged 65, referred by Dr. C. D. Trask of Kansas City. Numerous lesions on face and forehead. One brother and one son similarly affected. Carcinoma on left cheek. One growth excised from forehead, and one from right cheek.

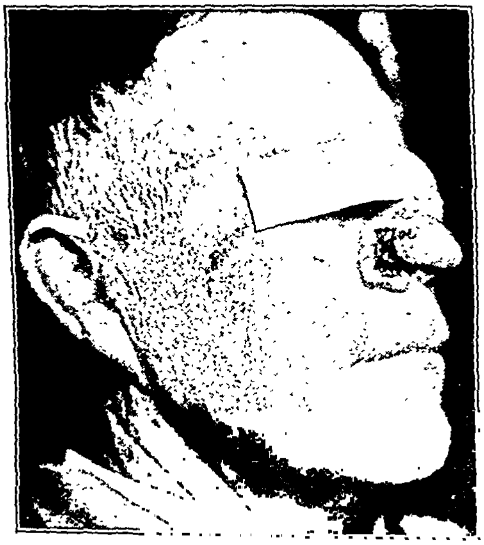

Fig. 4 (Case 9).—Seborrheic keratoses of the face, with prickle-cell carcinoma of the nose.

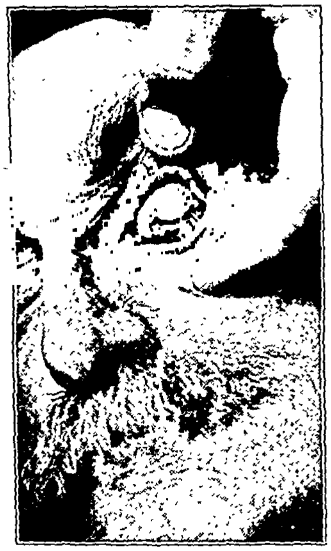

Fig. 5 (Case 12).—Keratosis of eyeball, with numerous keratoid lesions on face.

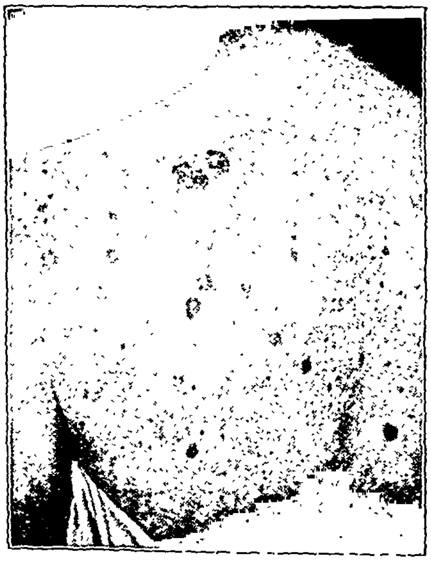

Fig. 6 (Case 13).—Typical example of seborrheic keratoses of the nevoid type.

CASE 23.—Street-railway pay clerk, married, aged 34, referred by Dr. Chas. B. Hopkins of Kansas City. Lesions on trunk. One growth excised from left side of trunk.

CASE 24.—Housekeeper, single, aged 34, referred by Dr. A. G. Swaney of Lee's Summit, Mo. Lesions on face and scalp. One growth excised from left temporal region.

CASE 25.—Farmer, married, aged 64, referred by Dr. N. P. Wood of Independence, Mo. Lesions on face, ear and trunk. Carcinoma on left ear. One growth excised from ear.

CASE 26.—Farmer, married, aged 63, referred by Dr. H. W. Tull of Carrolton, Mo. Lesions on face. Carcinoma on right cheek. One growth excised from right temporal region.

CASE 27.—Cattleman, married, aged 41, referred by Dr. Daniel Ross of Denison, Texas. Lesions on lower lip and on trunk. One growth excised from left suprascapular region.

CASE 28.—Housewife, aged 54. Lesions on face, scalp, trunk and left leg. One growth excised from left cheek, and one from left shin (Fig. 10).

CASE 29.—Telegraph operator, married, aged 31, referred by Dr. Ernest W. Reynolds of Bristow, Okla. Lesions on face and trunk. One growth excised from right ala of nose.

CASE 30.—Salesman, married, aged 57, referred by Dr. A. Comingo Griffith of Kansas City. Numerous lesions on trunk. One growth excised from left subscapular region.

CASE 31.—Stockman, married, aged 37, referred by Dr. Nathan Harrelson of Kansas City. Numerous lesions on face and trunk. One sister similarly affected. Carcinomas on forehead and on right cheek. One growth excised from right temporal region.

In all but three instances (Cases 12, 26 and 30), the biopsies were performed by means of a medium-sized cutaneous punch, under local anesthesia. Liquor formaldehydi was employed as a hardening and fixing agent. About one hundred frozen sections were made. These were stained with either osmic acid or sudan III. The rest of the material was blocked in paraffin, cut serially and stained with hematoxylin and eosin. I am indebted to Dr. W. K. Trimble and his assistant, Miss Blakesley, for much of this preliminary work.

After examining sections from a dozen or more of the lesions, it was apparent that the growths could be roughly separated into three distinct groups: first, and most frequent, a keratoid variety, characterized by great corneous hypertrophy, with some parakeratosis, a moderate degree of acanthosis, slight proliferative changes in the germinal layer, and more or less flattening of the papillary bodies; second, a nevoid type, which was practically identical with Unna's "naevus seborrhoeicus," and third an acanthoid or verrucose form, distinguished by considerable hyperkeratosis, very pronounced acanthosis, signs of exceedingly active proliferative changes in not only the stratum germinativum, but also at numerous other points in the rete, and enormous papillary hypertrophy. In these wartlike specimens the cutis showed inflammatory changes of a subacute nature, with capillary dilatation, extensive perivascular infiltration and small collections of leukocytes and round and plasma cells scattered through the upper derma.

As the studies progressed, the group characteristics of the three types became more obvious, until, toward the end, it was not a difficult matter to foretell accurately the histologic features of a majority of the growths even prior to excision.

Some of the more advanced keratoid tumors bore a distinct structural resemblance to early Roentgen-ray carcinomas (as represented by both comparative specimens[7] and Wolbach's[8] description), although the keratinization of the epithelial processes extending downward into the derma was not so prominent a feature here as in tumors of the Roentgen irritation type. In the earlier keratoid lesions the most noticeable change in the cutis was the dilatation, with occasional development of cysts, in the sweat ducts. The sebaceous glands were practically normal in all three classes, despite the fact that all contained considerable quantities of free fat. The nevoid tumors were richest in this material, the acanthoid less so, and the keratoid least of all.

Of the thirty-four specimens excised, nineteen were of the keratoid variety, eleven of the nevoid and four of the acanthoid. Needless to say, not all were typical examples, but the borderline cases were so infrequent that they could safely be disregarded.

From the point of view of prognosis, the keratoid lesions were by far the most dangerous. Nine of the patients who suffered from growths of this type presented also active manifestations of carcinomatosis.

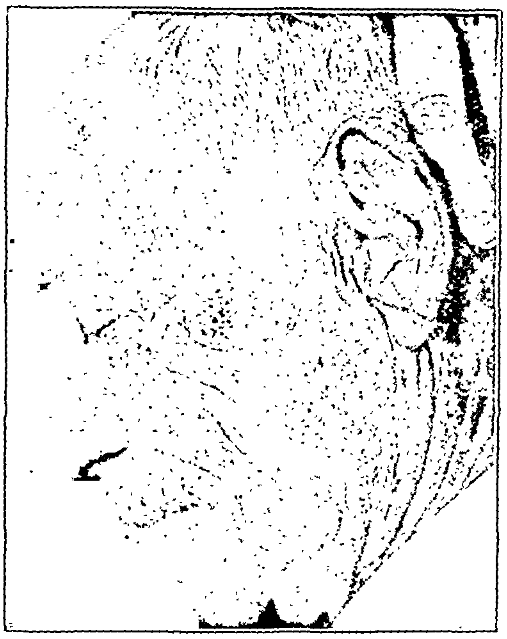

Fig. 7 (Case 18).—Seborrheic keratosis of the verrucose type, showing pigmentation and crusting. The patient's skin is dry, rough and harsh.

Both the clinical and histologic features in Case 12 were unique. So far as I know, a keratosis of this type has never before been reported as occurring on the eyeball. Prior to the removal of the entire tumor, Dr. Blakesley had scraped off a portion of the shelf-like mass and found that it consisted of elongated, cornified cells, many of which retained their nuclei. The base of the growth was exceedingly vascular, and contained many sinus-like, epithelial-lined cavities, as well as old and newly formed capillaries. There were no signs of malignancy, however, and the tumor did not recur after removal. The patient's sight was not impaired by the presence of the growth.

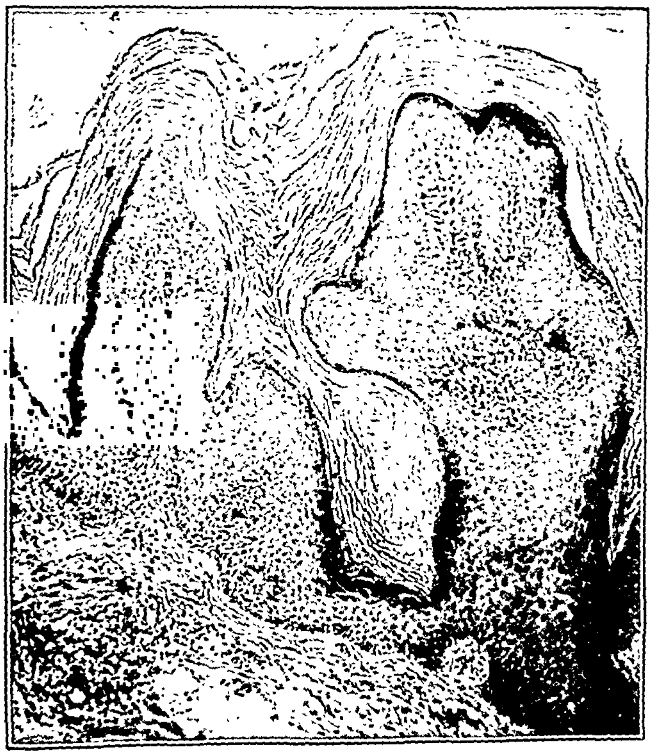

Fig. 8 (Case 18).—*Seborrheic keratosis of the verrucose type, showing hyperkeratosis, acanthosis and decided inflammatory changes in cutis (Leitz, No. 3 objective, No. 4 eyepiece, 20 cm. bellows extension).*

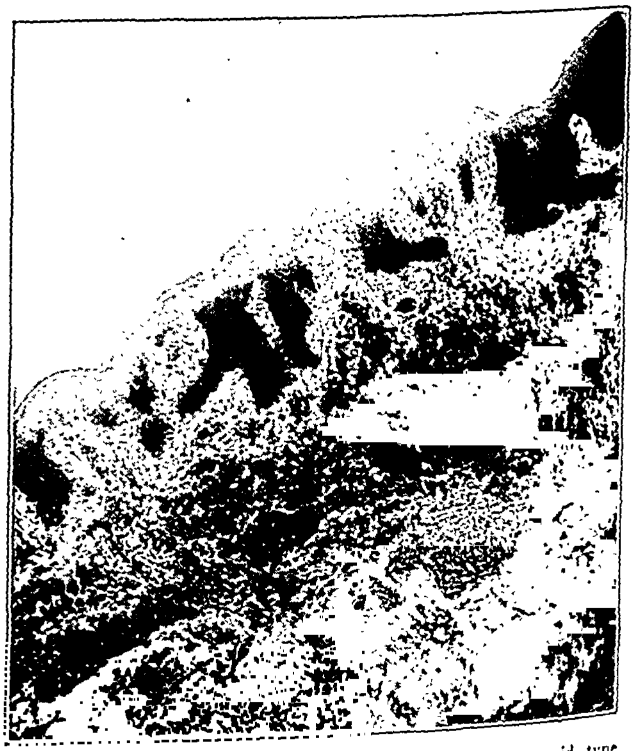

Fig. 9 (Case 20).—Early seborrheic keratosis of the nevoid type, showing slight parakeratosis, *pigmentation and changes in derma* (Leitz, No. 3 objective, No. 4 eyepiece, 12 cm. bellows extension).

For purposes of comparison, sections of a small cutaneous horn from the penis were examined. The lesion was one of three which had developed from a group of acuminate condylomas just back of the glans on a man of 27, and had existed for eight months. The papillary hypertrophy, sharply circumscribed acanthosis and excessive cornification were all suggestive of a possible relationship between cutaneous horns of this character and the verrucose type of seborrheic keratoses. As Unna[9] has stated, "the preference of cutaneous horns for the seborrheic regions of the skin, the scalp, forehead, the nose, the eyelids, the glans and the scrotum is somewhat remarkable; as is the seborrheic history of many of them," and it may be that in the warty form of seborrheic keratoses we have the *link* connecting certain types of cutaneous horns with seborrheic keratoses in general.

In view of the fact that the sebaceous glands are apparently unaffected in all three of the varieties here described, the appellation "seborrheic keratosis" might appear, on first thought, a misnomer. The objection cannot be sustained, however, if we accept the term

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[7] Through the courtesy of Dr. G. L. Harrington of Independence, Missouri.

[8] Wolbach: Jour. Med. Research, 1909, xxi.

[9] Unna: Histopathology of the Diseases of the Skin, Walker's translation, New York, 1896, p. 187.

"seborrheic" in the broad sense in which it is generally employed. In Unna's[10] "eczema seborrhoeicum," which is essentially identical with Elliot's[11] "dermatitis seborrhoeicum" and Duhring's[12] "seborrhoea corporis," the sebaceous glands show few, if any, changes, and many pathologists are of the opinion that the fatty character of the lesions is due solely to the material thrown off by the coil glands. Consequently, the disease is possibly more of a "syringodermatitis" than anything else. Unfortunately, dermatology is already suffering from an embarrassment of riches in the matter of nomenclature, and the wisest plan now is to stick to those terms which have met general approval and acceptance, even though we should strain a technical point or two in so doing. I, myself, must agree with Schuchardt[13] that an anomaly of secretion of the sebaceous glands is probably the essential and primary trouble in both seborrheic dermatitis and seborrheic keratosis. Otherwise why should the regions which are richest in these structures seldom escape involvement, while other localities, like the palms and soles, which are fairly a network of coil glands, exhibit the lesions of seborrheic dermatitis only occasionally, and of seborrheic keratoses never at all? Montgomery and Culver[14] have called attention to the effect of the ingestion of large quantities of butter fat on these glands, and it is not improbable that many other substances have a similar deleterious action.

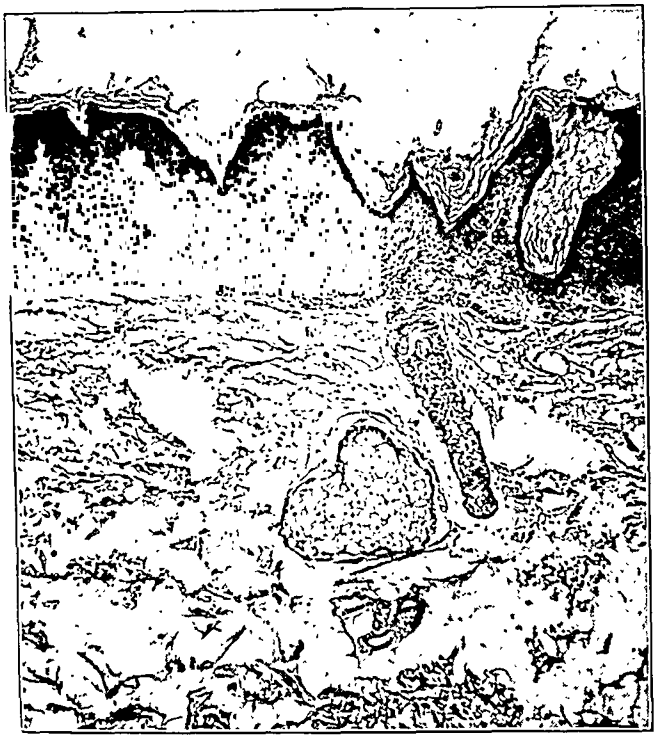

Fig. 10 (Case 28).—Early verrucose lesion, showing slight hyperkeratosis and pronounced papillary hypertrophy (Leitz, No. 3 objective, No. 4 eyepiece, 16 cm. bellows extension).

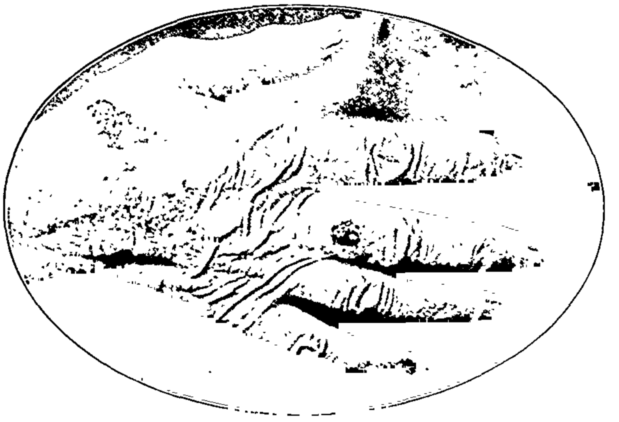

Fig. 11.—A typical example of "sailor's skin" in a woman of 70. The lesions are already showing carcinomatous tendencies.

TREATMENT

The earlier keratoid lesions are readily removed by frequent applications of a bland grease, such as rosewater ointment. Afterward, the occasional employment of a lubricant of this kind will prevent a recurrence, provided care is taken to avoid the use of hard water and highly alkaline soaps. Men whose faces are affected should never shave with a dull razor, and, after shaving, no soap should be allowed to remain on the skin. The nevoid, verrucose and advanced keratoid types are more resistant to treatment, and a salve consisting of salicylic acid (1 part), sulphur (1 part) and petrolatum (30 parts), as recommended by D. W. Montgomery[15] and by Stelwagon,[16] is generally required to remove the outer layers. This ointment may be applied on cloth at night, the patch being covered with a bit of oiled silk, and the whole held in place by a cross of adhesive plaster. As soon as the corneous mass is softened, it may be gently removed with a bit of cotton moistened with benzine. Of all the caustics that have been recommended for use in this condition, none, in my opinion, equals Pusey's carbon dioxid snow. One thorough freezing, with moderate pressure, for a period of from thirty seconds to one minute, is usually all that is required. The lesion is then painted with tincture of iodin, and dithymoldiiodid (thymol iodide, U. S. P.) or a similar antiseptic,

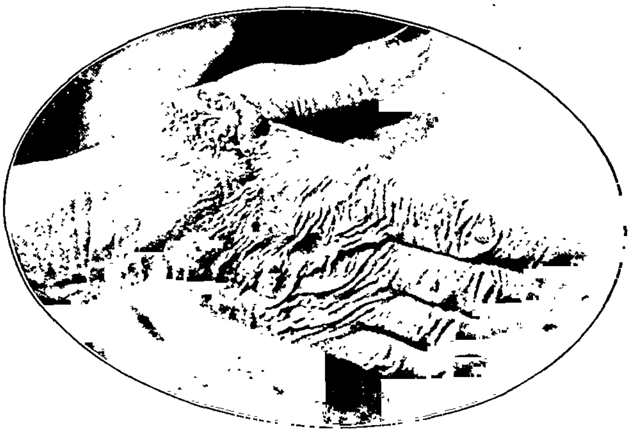

Fig. 12.—Following the use of a salicylic acid and sulphur ointment some of the lesions healed, but the one near the thumb has developed into a typical prickle-cell carcinoma (picture taken four months after first consultation, Fig. 11).

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[10] Unna: Jour. Cutan. Dis., 1887, p. 449.
[11] Elliot: New York Med. Jour., 1891, liii, 174.
[12] Duhring: Cutaneous Medicine, Philadelphia, 1896, Part 2.
[13] Schuchardt: Volkmann's Sammlung Chirurgie, 54-84 (cited by Hartzell, Note 6).
[14] Montgomery and Culver: Jour. Cutan. Dis., 1912, p. 319.

[15] Montgomery, D. W.: Philadelphia Med. Jour., 1898, p. 211.
[16] Stelwagon: Diseases of the Skin, Philadelphia, 1914, p. 536.

applied. If a bulky dressing is objectionable, a 5 per cent. ammoniated mercurial ointment may be prescribed.

In growths that have already assumed a malignant character, the treatment is that of carcinoma of the skin. On the scalp, forehead, lips, trunk and limbs, radical excision is nearly always to be preferred. On the face, and particularly in the nasal and orbital regions, admirable results can often be obtained by the use of the Roentgen rays or radium.

CONCLUSIONS

Seborrheic keratoses are the most frequent of all forerunners of prickle-cell cancer of the skin. In their production, age and exposure to sunlight and to wind are important factors.

The lesions are of three types, keratoid, nevoid and acanthoid, or verrucose. The keratoid are the most liable to become carcinomatous.

The best plan of treatment is prophylactic. Failing this, the removal of the superficial layers of the growth by means of a keratolytic, followed by thorough freezing of the base with carbon dioxid snow, is the method of choice. Lesions which already exhibit signs of malignancy should be excised. If, for cosmetic reasons, excision is inadvisable, Roentgen therapy or radium may be tried. Under no circumstances should silver nitrate or other superficial caustics be employed.

Every person presenting the symptoms of seborrheic keratosis, particularly if the lesions be of the keratoid type, should be warned of the danger incurred by neglecting treatment. Carcinomaphobia is to be deplored, but wilful negligence is inexcusable.

Lathrop Building.

The Typhoid Epidemic at Barcelona.—An official announcement is quoted in a recent issue of *Siglo Medico* saying that after causing about 4,000 deaths the epidemic of typhoid seems to be dying out, only seven new cases having been reported in the last day or so. This is only 1 per 100,000 inhabitants. It is proposed to have a celebration "to show the gratitude of the populace to chance that has freed the city from this terrible scourge. . . ." The hotels, theaters and stores are deserted and it is hoped that the king will come to the festival and thus break up the economic crisis which is still as serious as at the height of the epidemic." A letter from a leading physician in Tortosa is published in the *Revista Clinica de Madrid,* which laments that the populace in Tortosa is now paying the penalty for the crime of the municipal authorities at Barcelona in allowing typhoid to get such a hold that 50,000 cases were officially recorded, and the only prophylactic measure proposed or employed by the authorities was to advise the people to boil the water!

TRANSPLANTATION OF THE ANTERIOR TEMPORAL ARTERY*

J. SHELTON HORSLEY, M.D.
RICHMOND, VA.

Occasionally defects of the cheek, caused by accidents, or as a result of operation for malignant disease, or from gangrene, are so extensive that plastic correction is exceedingly difficult. The margins of the defect are frequently fixed to the bone and do not permit much stretching. If the flaps are taken from the arm, the character and texture of the skin is so different from the skin of the face that the contrast is very noticeable. Then, too, it is frequently necessary to have an epithelial lining on the inside of the mouth, and though a mucous membrane lining is preferable to one of skin, it is often impossible to secure mucous membrane.

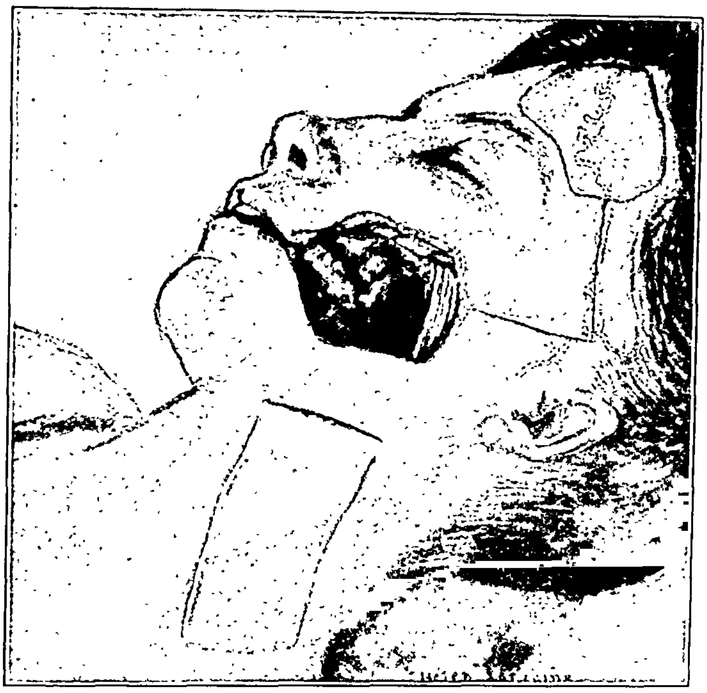

Fig. 1.—First step of transplantation of the anterior temporal artery with a frontal flap. Outlines of the flap on the neck and of the frontal flap, together with the incision for dissecting out the anterior temporal artery, and for burying it in its new location are shown.

Flaps from the forehead are used to remedy these defects, and are taken with the pedicle either from the temporal region or from the middle of the forehead. This, of course, necessitates cutting the pedicle later and returning it to its original position. If the anterior temporal artery is included in the pedicle, the flap is thus deprived of an important blood supply. Frequently flaps that cover defects of the cheek obtain their sole nourishment around the edges, and if a flap has also been turned in to make a lining, there is a still greater demand on the external flap for blood supply. Dunham of New York has met this objection by dissecting the temporal artery from the flap and returning the pedicle minus the artery to its original position. This, of course, is an improvement; but it necessitates two operations, and the dissection of the temporal artery from the transposed and infiltrated pedicle is more difficult than a dissection from the normal tissue at the original operation.

On two occasions I have transplanted the anterior temporal artery, dissecting it free from its origin to the margin of the proposed flap.

The anterior temporal artery presents peculiar advantages for transplantation. It is not essential to the nourishment of the forehead or scalp, which has an abundant anastomosing blood supply. It is tortuous and when dissected free, even with some surrounding tissue, it may be straightened and will reach much farther than before dissection. This permits placing the flap in positions distant from the origin of the artery, and maintenance of an abundant blood supply.

The patient should be prepared for rectal anesthesia according to the method of Gwathmey. The bowels are opened by a dose of oil the night before, followed by soap-suds enemas from two to three hours before the operation. An hour before the operation a suppository of from 5 to 10 grains of chlorbutanol is given. A hypodermic of ¼ grain of morphin and 1/120 grain of atropin is administered half an hour before the operation, and the injection of oil and ether is begun slowly about ten minutes later. The mixture consists of pure olive oil and ether, varying from equal parts in children to three parts of ether and one of oil in patients difficult to anesthetize. In adults, usually two parts of ether to one of olive oil is a satisfactory mixture. The amount injected is 1 ounce of the mixture to every 20 pounds of body weight, but in any case it should not exceed 8 ounces of the 75 per cent. solution of ether in oil. This is given slowly in the room, with the patient turned on his left side, and should take from five to ten minutes. The patient usually goes under the anesthetic gradually. If anesthesia seems profound, especially as indicated by cyanosis and disturbance of the respiration or a bad pulse, some or all of the mixture can be withdrawn through a rectal tube. About five minutes before the operation is concluded all of the mixture is withdrawn, the rectum and sigmoid are irrigated with cold water, and several ounces of pure olive oil are slowly injected and allowed to remain. This anesthesia in my hands has been most satisfactory for surgery of the neck, for plastic work about the face, and particularly for such an operation as transplantation of the anterior temporal artery.

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* Read at a meeting of the Southern Surgical and Gynecological Association, Dec. 15, 1914, at Asheville, N. C.

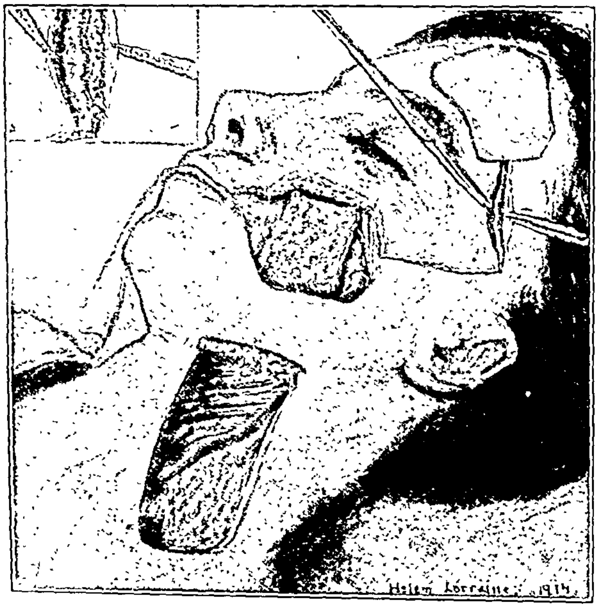

Fig. 2.—The flap in the neck has been dissected free and drawn under the bridge of skin separating its base from the defect in the cheek. The artery has been partially dissected. At *A* is shown a section of the artery with ligation of posterior temporal artery when necessary to secure greater length.

The cheek is prepared for the new flap by trimming away the scar tissue along the margins of the defect and by undermining the skin slightly. The position of the flap to be transplanted is outlined on the forehead with the point of a knife, going as near to the hair line as possible. An incision is made over the region of the anterior temporal artery, extending from its origin to the point at which the artery enters the proposed flap. This incision should be straight, no matter what the course of the artery. Great care is taken not to injure the artery and not to grasp it with forceps. It can be easily handled by picking up the tissue around it with delicate thumb forceps. Considerable tissue is included with the artery in order not only to avoid injury to the artery, but also to preserve its nerve supply. After the artery has been freed, the flap is cut and placed in position. This gives an idea where the artery shall be buried (Figs. 1, 2, 3 and 4). The flap is covered with cloths wrung out of warm salt solution and an incision for burying the artery is made just through the skin. The margins of this incision are undermined freely, but not too deeply. In this way the branches of the facial nerve are not injured. The flap is placed in position and fastened with a few sutures. It should not be sutured too tightly, because the flap has too much nutrition; and unless there is some point where the excess of blood can ooze out for the first day or two, the tension in the flap from the arterial pressure may be so great as to cause partial necrosis. This, in fact, is the chief danger, not too little but too much blood supply. If it is necessary to have an epithelial lining, a flap may be turned up from the neck and sutured with the skin side toward the cavity of the mouth before the anterior temporal artery is transplanted, or mucous membrane from the tongue can be used, as suggested by Willard Bartlett. The illustrations show the manner of doing this.

By the second day the flap is swollen and becomes a dark purple color. If it is too tense, every few hours a sharp knife can be inserted along the edges of the flap to scrape it a little so as to promote bleeding and relieve the tension. After a week the swelling begins to disappear, and new venous capillaries drain away the blood. The efficiency of the artery can be demonstrated months after the operation by pressing on it and noting the change in color of the flap.

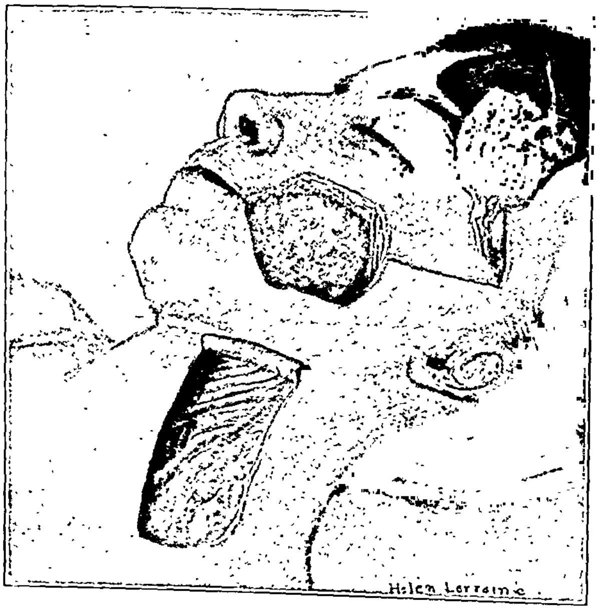

Fig. 3.—The flap from the neck has been sutured in position. The anterior temporal artery and frontal flap have been freed, and are ready to be transplanted.

In two cases in which this operation was done the artery has remained patent and is pulsating several months after the operation. In the first case, all of the flap took. In the second, a middle aged woman in poor health, about two-thirds of the flap sloughed away on account of excessive passive hyperemia.

REPORT OF CASES

Case 1.—Mr. W. H. D., aged 22 years, was injured, Feb. 2, 1914, by a shotgun, while trying to quell a disturbance among the laborers of a mine, of which he was superintendent. The gun was discharged at short range and blew out his left eye, a good portion of the left maxillary bone and the septum of the nose, together with the soft tissues over the cheek. A large cavity was left connected with the nasal fossa. This was closed by transplanting from the forehead a flap with the anterior temporal artery. The technic was as described above. All of the flap took.

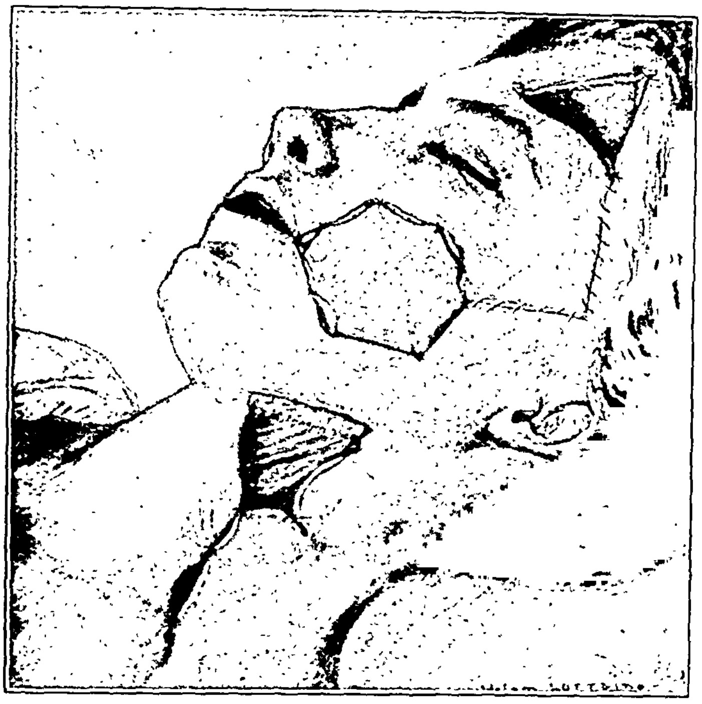

Fig. 4.—The anterior temporal artery with the frontal flap has been transplanted and the flap sutured in position. The raw surface left on the forehead has been diminished by sutures at its angles.

Case 2.—Mrs. S., aged 47 years, was referred to me for a recurrent cancer of the cheek. She had been operated on a few months before by another surgeon, and as recurrence was prompt and the glands of the neck were involved, the prognosis seemed bad. A block dissection was first done on the upper part of the neck, removing glands, fat and fascia in one mass. The cancer in the cheek, which was about an inch and a half in diameter, was then excised with a Paquelin cautery. The defect was, of course, extensive and the deformity great. A flap of skin was turned under as shown in the accompanying illustrations, and sutured to the wound with the skin surface inward. The anterior temporal artery with a flap from the forehead was then transplanted as in the previous case. The flap became purple and tense, but on scraping its edges and letting out some blood, its color would again become normal. The growth of capillaries was poor, and about two-thirds of the flap sloughed off on account of the intense passive hyperemia. To the well-nourished remnant, however, flaps from neighboring tissues were later attached and grew satisfactorily.

Infant Mortality as an Index to Social Welfare.—Sir Arthur Newsholme, the eminent English statistician, says that infant mortality is the most sensitive index we possess of social welfare. And then he adds: "If babies were well born and well cared for, their mortality would be negligible. The infant death-rate measures the intelligence, health and right living of fathers and mothers, the standards of morals and sanitation of communities and governments, the efficiency of physicians, nurses, health officers and educators."—*Bull. Chicago School of Sanitary Instruction.*

THE PYLORUS AFTER GASTRO-ENTEROSTOMY FOR CONGENITAL PYLORIC STENOSIS

A REPORT ON ITS CONDITION TWO HUNDRED AND FIFTY-SIX DAYS FOLLOWING THE OPERATION

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AND
CLIFFORD G. GRULEE, M.D.
CHICAGO

There have been but few opportunities of examining the condition of the pylorus at any great length of time after an operation for the relief of the symptoms associated with congenital pyloric stenosis. In many of the cases which terminate fatally, death has occurred as a direct result of the operation or so soon that no regressive changes in the hypertrophied muscle could have been expected. Roentgen findings would seem to indicate that the pylorus never becomes patent, even after successful gastro-enterostomy. If the pylorus is permanently occluded, the indication for surgical treatment becomes imperative, and there should be no attempt at medical treatment. Cautley and Dent state that all patients with true congenital pyloric stenosis die before reaching the age of 4 months unless operated on. Heubner, Starck, Bloch and Bendix have between them reported seventy-one cases treated medically with sixty-six recoveries. To explain the differences in the results of treatment, it has been suggested that there are two types of cases, one a true congenital hypertrophy, the other a spasm of the pylorus, which could be overcome by lavage and diet.

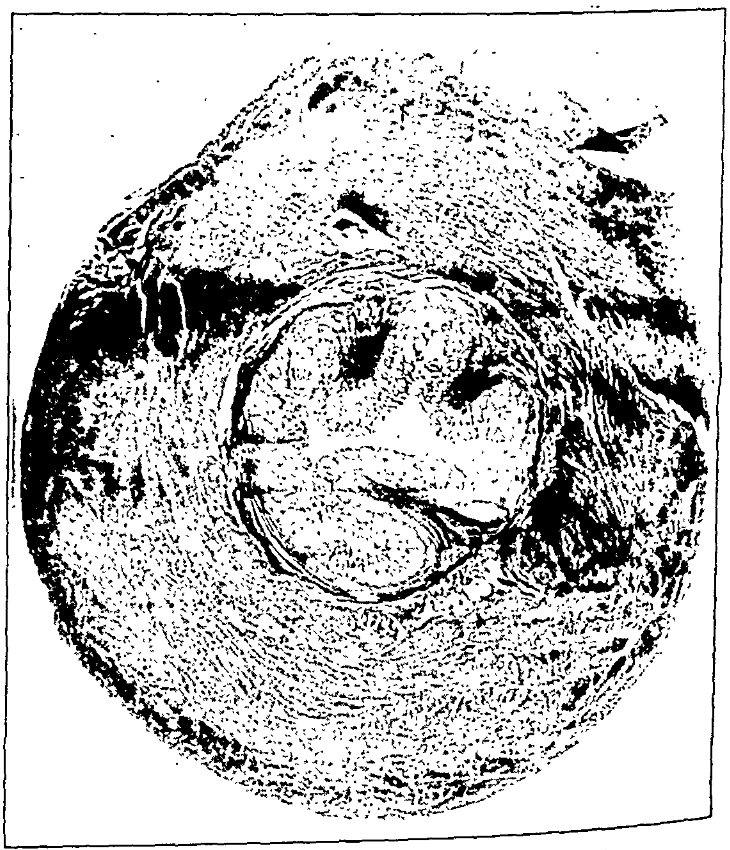

Fig. 1.—Cross-section through the pylorus, showing hypertrophied musculature and connective tissue. Mucous membrane is thrown into folds. It is redundant, and if the pressure of the hypertrophied muscle were removed, the lumen of the pylorus would be reestablished. Pyloric orifice reduced to small slit, through which a small probe may be passed.

This case is reported because it would seem to indicate that the stenosis associated with congenital hypertrophy of the pyloric sphincter persists even after ideal conditions have been provided for rest of the pyloric sphincter by a well-functioning gastro-enterostomy.

L. A., a male baby, aged 2 months, was admitted to the Presbyterian Hospital, Nov. 11, 1913. The child had been breast fed up to a month before admission. Vomiting commenced in the fourth week and has recurred after almost every feeding. The bowels have moved only every second or third day, a glycerin suppository or enema being required. There has been a progressive loss of weight. The baby is small and has a dry, weazened appearance. Nothing especial was found in the general examination. Whenever the child was given water or milk, a distinct enlargement of the epigastrium was noted. Peristaltic waves could be made out, but no distinct tumor at the pylorus could be found. Vomiting occurred soon after the ingestion of food, and was propulsive in character. Examination of the stomach contents removed by a tube revealed a total acidity of 10, free hydrochloric acid 9, combined hydrochloric acid 1. Hemoglobin was 85 per cent., red blood-cells 4,840,000, leukocytes 8,000.

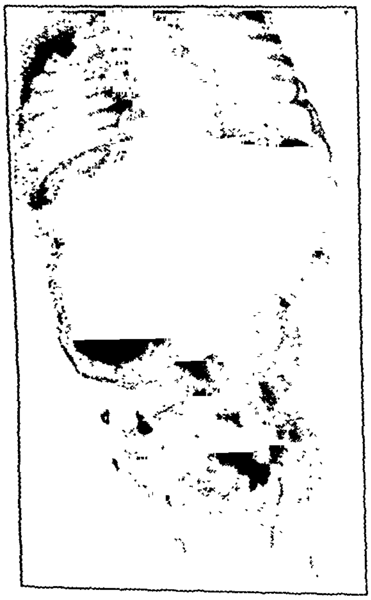

Fig. 2.—Picture taken half an hour after bismuth meal. A small amount of the bismuth has passed into small intestine.

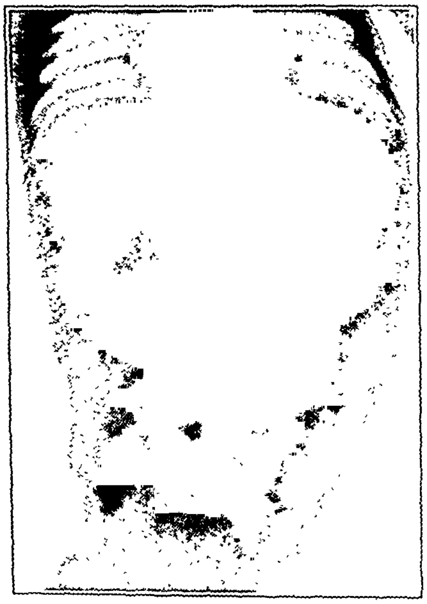

Fig. 3.—Picture taken one and one-half hours after bismuth meal, showing marked retention. Some bismuth has passed into small intestine and the shadows are more marked than in preceding picture.

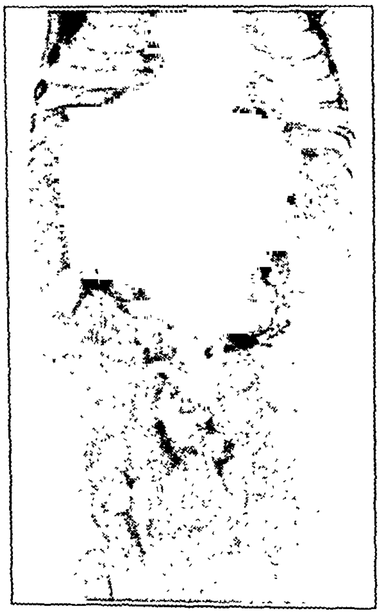

Fig. 4.—Picture taken seven days after operation, showing food passing through gastro-enterostomy orifice.

Urinalysis revealed some nucleo-albumin, but was otherwise negative.

A Roentgen examination of the stomach after a bismuth meal revealed marked retention, although small shadows were seen in some of the intestinal loops.

The findings were typical of congenital pyloric stenosis, and an operation was performed Nov. 14, 1913, three days after the child entered the hospital. Under ether anesthesia a midline incision was made in the epigastrium. When the peritoneum was opened an enormously distended and tense stomach popped out. The pylorus was enlarged — it was the size of the terminal phalanx of the middle finger — and was white, somewhat edematous and hard. It had the characteristic appearance of the enlargement associated with congenital pyloric stenosis. The stomach was so tense that it could not be manipulated easily in performing a posterior gastro-enterostomy, and therefore it was punctured as soon as the transverse mesocolon was cut through. The punctured wound was then closed with a purse-string suture, as it could not be made to come easily in the line of the gastro-enterostomy. The ordinary posterior gastro-enterostomy was performed without any trouble.

Feeding was commenced immediately after the operation, and a progressive gain was noted. The baby weighed 6 pounds and 11 ounces, December 2 — eighteen days after the operation — a gain of 1 pound and 11 ounces. The baby was discharged, December 17, weighing at this time 6 pounds and 12 ounces.

The baby did well after leaving the hospital, but was brought back March 24, 1914. During a few days before admission he had an attack of difficult breathing. Fever, cough and labored breathing had been noted. Vomiting had not occurred at any time. Percussion revealed dulness over the upper lobe of each lung posteriorly. Resonance was more impaired over the right upper lobe. Bronchial breathing and moist and crepitant râles were heard over the area of dulness. A Roentgen examination of the chest over the right upper lobe revealed a shadow, but no pus was found when a needle was inserted.

The baby when admitted to the hospital the second time weighed 9 pounds and 5 ounces. The weight reached 8 pounds and 9 ounces, April 14. Following this there was a rapid gain, and April 24 the baby weighed 9 pounds and 9 ounces. No vomiting was noted, and the gastro-enterostomy opening seemed to be working perfectly, judging from the rapid gain in weight and absence of digestive disturbances. The pneumonia continued from March 24 to April 7, when the temperature became normal. During most of this time the temperature at night reached 104 or 105.8 with a morning remission of 2 degrees. The baby left the hospital April 28, 1914.

The baby was brought to the hospital the third time, July 28, 1914. The symptoms at this time were high fever, cough, difficult breathing, pain in the chest and slight convulsive attacks. Illness began two days before entrance with restlessness, slight cough and rapid breathing. The weight at this time was 10 pounds and 4 ounces. Respirations were labored, rapid and grunting. The breathing was mostly abdominal. Physical examination revealed consolidation of almost the entire right lung and of the left upper lobe. Blood count taken at this time revealed: red blood cells 4,750,000, leukocytes 19,500.

The baby died a few hours after entering the hospital, and at the necropsy the following anatomic diagnosis was made: Lobar pneumonia. Passive hyperemia of posterior portions of the lungs. Left fibrinous pleuritis; hyperplasia of the tracheobronchial lymph-nodes; passive hyperemia of the spleen; moderate edema of the brain; marked diminution of the yellow color in the adrenal cortices; acute diffuse parenchymatous nephritis. Right obliterative pleuritis. Pyloric stenosis; healed gastro-enterostomy.

When the abdomen was opened the stomach was found to be of normal size. At the pylorus an enlargement was found which was of approximately the same size and consistency as that found at the operation. From the duodenal side, the enlargement projected into the lumen of the bowel much as the cervix of the uterus projects into the vagina. When the stomach was opened, the lumen of the pylorus was found to be greatly reduced in size, and surrounded by a rigid wall. A fine probe could be passed through the opening. The gastro-enterostomy orifice was in the pyloric antrum, about 1 inch to the cardiac side of the pylorus. It measured about an inch in length. A linen suture projected into the cavity of the stomach. This had in greater part sloughed through the walls of the stomach, but still remained attached at some points.

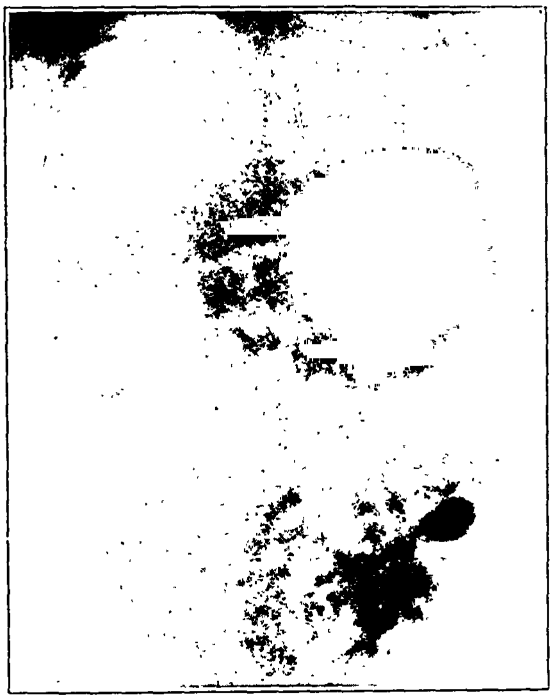

Fig. 5.—Picture taken six months after operation, half an hour after bismuth meal.

Histologic examination of a cross-section of the pylorus revealed enormous hypertrophy of the circular muscular coats. The hypertrophy was not confined to the circular coats alone, for the longitudinal muscles also seemed to have undergone a hypertrophy. The connective tissue bundles were also larger than normal, and seemed to be involved in the process. The mucous membrane was thrown into folds and seemed to be redundant. It was not contracted, and apparently it was merely compressed by the surrounding hypertrophied muscular tissue. If a wedge of muscle were excised and compression removed, the pylorus would undoubtedly become patent. The fact has been taken advantage of in some cases in which the operation which has been performed has merely consisted of excising a piece of the hypertrophied muscle, down to the mucous membrane, to permit of its expansion. In some of the cases in which this procedure has been practiced the pylorus has remained patent and the child has developed normally.

Notwithstanding that a sloughing suture was found in the gastro-enterostomy orifice, food was apparently passing through it freely, for the child had not vomited, except occasionally during the first two days following the operation. There was no induration about the line of suture and no adhesions between the viscera and surrounding structures. Apparently the gastro-enterostomy was functioning perfectly.

A Roentgen examination of the stomach following a bismuth meal five months after the operation was performed indicated that all the food was passing throughh the gastro-enterostomy orifice. This has also been the case in which a study has been made of a large series of postoperative cases observed by Scudder, Richter and others.

This case, with others which have come to necropsy some months after operation, such as those reported by Morse, Murphy and Wohlbach and Walton, show that a congenital pyloric stenosis associated with a hypertrophy of the musculature and connective tissue about the pylorus is permanent, and is not relieved after a gastro-enterostomy which functions perfectly.

The case reported by Morse, Murphy and Wohlbach came to necropsy six and one-half months after operation, and the one observed by Walton seven months after. In both instances the condition of the pylorus was the same as at operation, and in Walton's case the pylorus was water tight.

As the stenosis is permanent and not relieved when the pylorus is put in a condition of at least partial rest by a gastro-enterostomy, it would seem that attempts to relieve this stenosis by gastric lavage and medical treatment were futile. The diagnosis once established, the indication for treatment, which is surgical, is established. The high mortality associated with the early cases was due to the poor condition of the children when operated on. Posterior no-loop gastro-enterostomy is the most satisfactory operation; although excision of a wedge of the hypertrophied muscle down to the mucous coat, permitting of expansion of the mucous membrane, seems to give good immediate and late results.

Gastro-enterostomy is well stood by infants, if performed rapidly and without much trauma. We have had five cases with no deaths. In all cases the children have developed normally.

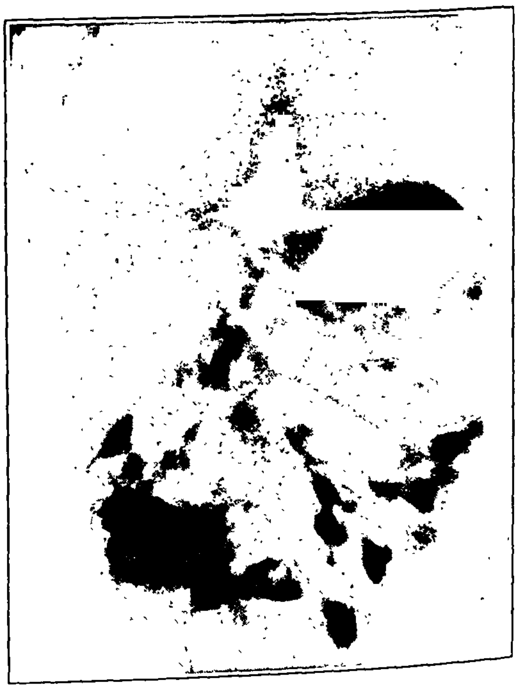

Fig. 6.—Picture taken six months after operation, two hours after bismuth meal, showing amount of food passing into small intestine through gastro-enterostomy orifice.

122 South Michigan Avenue.

Public Interest and Public Sanitation.—"No sanitary improvement worth the name will be effective whatever acts you pass or whatever powers you confer on public officers unless you create an intelligent interest in the public mind."—*Bulletin of the Department of Health, City of Winnipeg.*

THE SERUM TREATMENT OF HYPERTHYROIDISM

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The physiologic and chemical studies of recent years have established the probability that the function of the thyroid gland is to prepare an active substance or hormone which is essential to the health of the organism. This substance probably is protein in character and contains iodin in chemical combination. This active substance probably forms a large portion of the colloid stored in the aveoli of the gland, and its physiologic activity is proportioned roughly to the iodin content. Under physiologic conditions only a sufficient amount of this hormone finds entrance to the circulation to meet the normal needs of the tissues, and recent work in this laboratory indicates that the control of this absorption is, at least in part, a function of the nervous system. When the gland for various reasons, which will not be discussed, becomes overactive, its secreting cells multiply, its circulation increases, the store of reserve material is drawn on in excess and we have a train of symptoms known as hyperthyroidism.

If there is one fact established regarding the disease it is that the thyroid plays the predominant rôle in the production of symptoms. The circulating blood probably contains an excess of the peculiar active protein supplied by the gland, and the tissues react to it. To no small degree the disease may be regarded as a toxemia, and the source of the toxin is to be found in the excess of thyroid secretion excreted into the blood from the overactive gland. The pathologic studies of recent years have indicated that in cases which come to necropsy other glandular structures show lesions, but we have little information to enable us to determine to what degree these may be the cause or an effect of the thyroid disturbance. The pathology of the thyroid is so constant, the clinical symptoms are so closely similar to the physiologic effects produced by overdosing with thyroid secretion, and the therapeutic measures which have secured the most relief all point so strongly to the thyroid origin of the symptoms of the disease that it has been accepted as the basis for the serum treatment. It is not the purpose of this paper to enter into a prolonged discussion as to the nature of the disease; therefore no elaborate attempt will be made to defend the principle just announced. Certain well-authenticated observations point almost incontrovertibly to such a conclusion. These observations may be summarized as follows:

1. The gland is enlarged. It has a much increased blood supply and histologically shows marked evidence of an increase in the total amount of secreting epithelium.

2. The symptoms of the disease, such as loss in weight, increased heart action, weakness, increased oxygen absorption, etc., can be imitated by giving to normal persons large amounts of thyroid preparations.

3. Removal of the gland or a diminution of its blood supply by surgical means relieves the condition, while many observations show that these patients are in most cases more than usually sensitive to thyroid administration.

The gland, therefore, is overactive. The function of the gland is not subserved within itself. The secretion prepared in the gland must reach distant organs and tissues. If the gland is overactive and an additional amount of the active secretion, which is chemically an iodized protein, reaches through the medium of the blood supply the tissues which it stimulates to unusual activity, we have the complex of symptoms which we recognize as exophthalmic goiter. The blood in exophthalmic goiter, therefore, must contain an unusually large quantity of the active secretion prepared in the thyroid gland. When this secretion is present in the blood within normal limits, the physiologic activity alone is served. When, on the other hand, excessive quantities are present, pathologic conditions are produced.

The purpose of the serum treatment is to prepare in an alien species of animals a serum having special antagonistic properties to the human thyroid secretion. The injection of this serum into a patient having exophthalmic goiter provides him with a ready-made antagonist to a complex toxic substance circulating in his blood.

The first preparation of the serum was a direct result of some experiments which I made in 1905. The purpose of these experiments was to determine whether it was possible to prepare an antiserum from the nucleoproteins of an organ which would have a more specific action than a serum made by inoculating an emulsion of the whole organ. (The literature in regard to the specificity of cytotoxic serum is summarized in the forthcoming fifth volume of Forchheimer's therapeutics by Dr. Richard Weil[1], so that only the arguments of particular interest will be given here.)

In 1905 I reported the results of a series of experiments with immune serums developed by injections of nucleoproteins. These experiments gave evidence of specific cytotoxic action, more definite than any which had been published previously. At the Toronto meeting of the British Medical Association, I read a second short paper dealing with the subject. Since these results have been made the basis of a therapeutic method, and since the validity of the observations has been called in question in the minds of many by the experiments of Pearce, I wish to review the situation and present reasons for adhering to the belief expressed in my first paper on this subject, namely, "Such a thing as absolute specificity under all conditions has never been demonstrated and probably never will be, but it is possible to make a serum which will act primarily on a given organ."

Since the publication of the papers referred to above, many experiments with nucleoprotein serums have been made in this laboratory and have confirmed the position originally taken. The method of preparing the nucleoprotein has been practically the same as that outlined in my first paper, with the exception that blood-free organs have been used, and the prepared proteins have been preserved for injection by freezing rather than by chlorofrom or by drying.

If attempts are made to duplicate these results, I suggest that the method I have outlined for preparation of the proteins be followed. Pearce followed what he conceived to be an improvement, namely, the boiling of the hashed organ in alkaline salt solution previous to its filtration. This procedure undoubtedly hastened the filtration time, but it destroyed the biologic character of the protein. It is known that many specific enzymes cling to nucleoproteins in their solution and precipitation; these would be destroyed by boiling. An excellent instance of the destruction of the specific character of a nucleoprotein by boiling may be seen in the case of the nucleoprotein of the parathyroid gland, which, when freshly prepared, is effective in relieving the symptoms of parathyroid tetany, but which is absolutely useless for this purpose if it has been boiled. Since the publication of Pearce's paper, I have made experiments in which the prepared nucleoprotein was divided into two portions for inoculation, one portion boiled and the other unboiled. The unboiled protein was effective, but I have never been able to get an active serum with the boiled protein. With the exception of the means of preserving the protein, the same methods have been employed in the production of the serum as were outlined in the previous papers. I quote from one of the former papers certain observations regarding the difficulties to be encountered.

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[1] Forcheimer: A System of Therapeutics, v. D. Appleton & Co., New York.

To get the best results the protein should be freshly prepared before each inoculation. Considerable difficulty was encountered in the failure of a large percentage of the animals to produce a highly active serum, even though they had the best of care and were inoculated with satisfactory proteins. For instance, out of a lot of five rabbits inoculated with liver nucleoproteins, only one produced a highly active serum; of four sheep inoculated with thyroid proteins, only one produced an active serum. My experience in this matter has led me to the conclusion that it is more difficult to form antibodies to nucleoproteins than to globulins or albumins.

EVIDENCES OF SPECIFICITY

The evidence on which I draw the conclusions of specificity is based on precipitation, agglutination, absorption experiments and on the effects of animal injections.

The Precipitin Reactions.—These are specific except in high concentration, and here the relative speed and completeness of the reaction shows a decided preference of the serum to unite with its specific antigen.

In Tables 1, 2 and 3 are shown the reactions of different serums made against human nucleoproteins as antigen.

TABLE 1.—ACTION OF THYROID NUCLEOPROTEIN SERUM ON THYROID, KIDNEY, SPLEEN, LIVER AND LYMPH-NODE NUCLEOPROTEINS; HUMAN PROTEINS

	10 Min.	30 Min.	3 Hrs.	24 Hrs.
Thyroid nucleoprotein....	+	++	+++	+++
Kidney nucleoprotein.....	—	—	?	+
Spleen nucleoprotein	—	—	—	+
Liver nucleoprotein..	—	—	+?	+
Lymph-node nucleoprotein.	—	—	+	+

TABLE 2.—ACTION OF KIDNEY NUCLEOPROTEIN SERUM ON THE SAME NUCLEOPROTEINS AS IN TABLE 1

	10 Min.	30 Min.	3 Hrs.	24 Hrs.
Thyroid nucleoprotein....	—	—	—	—
Kidney nucleoprotein	+	++	+++	+++
Spleen nucleoprotein	—	—	?	+
Liver nucleoprotein	—	—	—	?
Lymph-node nucleoprotein.	—	—	±?	+

TABLE 3.—ACTION OF THE HOMOLOGOUS SERUM ON EACH NUCLEOPROTEIN AT THE END OF THIRTY MINUTES

	Thyroid Serum	Kidney Serum	Spleen Serum	Liver Serum	Lymph-Node
Thyroid nucleoprotein.	++	—	—	—	—
Kidney	—	++	—	—	—
Spleen	—	—	+	—	±?
Liver	—	—	—	++	—
Lymph-node	—	—	±?	—	++

My former colleague, Dr. P. A. Shaffer, has confirmed my results on the specific precipitin and agglutinin reactions obtained by nucleoprotein serums, and I am able to quote one of his tables (Table 4) in support of these statements.

TABLE 4.—RESULTS OBTAINED IN AGGLUTINATION AND PRECIPITATION REACTIONS WITH SERUM DEVELOPED FROM NUCLEOPROTEIN AS ANTIGEN

	20 Min.	30 Min.	1 Hr.	16 Hrs.
Liver Suspension				
Kidney nucleoprotein serum.	—	—	—	—
Liver nucleoprotein serum..	—	—	+slight	++
Kidney Suspension				
Kidney nucleoprotein serum.	+slight	+	+++	+++
Liver nucleoprotein serum..	—	—	+slight	++
Liver Nucleoprotein				
Kidney nucleoprotein serum.	—	—	+very slight	+
Liver nucleoprotein serum..	+slight	+	++	+++
Kidney Nucleoprotein				
Kidney nucleoprotein serum.	+slight	+	++	+++
Liver nucleoprotein serum..	—	—	+	+

The Agglutination Reaction.—This reaction closely resembles the agglutination reaction which is used so much in bacterial immunity work. The emulsion of fine organ particles is prepared as follows:

The tissue is ground in a fine hashing machine and the pulverized mass suspended in normal saline. This suspension is centrifugated in a high speed machine with the result that the finer particles come down at the top of the sediment. These are removed by a pipet, suspended in salt solution and the suspension filtered through cotton; such an emulsion will be found to be serviceable for the flocking or agglutination reactions. The reaction is highly specific.

TABLE 5.—REACTION OF THYROID ANTISERUM ON EMULSION OF THYROID, KIDNEY, LIVER, SPLEEN AND LYMPH-NODE

	5 Min.	10 Min.	20 Min.	3 Hrs.	24 Hrs.
Thyroid	+	+++	+++	+++	++–
Kidney	—	—	—	+	+*
Liver	—	—	—	—	—?
Spleen	—	—	—	—	—?
Lymph-node .	—	—	—	—	—?

* At twenty-four hours the kidney showed a mild positive agglutination, but the others were no greater than controls.

Agglutination reactions of this sort have been obtained by a variety of serums, and with active serums the specific character is marked, as is shown in Table 5. The reaction is more readily carried out than the precipitin reaction, for the success of the latter depends on the use of perfectly fresh nucleoproteins and also on a neutral reaction. If the reaction is too alkaline, as is likely to be the case unless especial care is exercised, no precipitin reaction will be obtained, even with highly active serum.

Absorption Experiments.—In addition to the foregoing reactions, absorption experiments have been tried as follows:

The serum was mixed with finely hashed muscle tissue from the same animal species as the antigen from which the serum was developed; that is, serum developed by the injection of dog kidney nucleoprotein, was absorbed by finely chopped dog muscle. The mixture was allowed to remain in the incubator for fifteen minutes and was then transferred to the refrigerator for three hours. At the end of this time the extract was centrifugated and filtered, and the clear serum thus obtained was used in the same kind of precipitin and agglutination experiments as outlined above, with the result that both reactions still occurred, though they were somewhat weaker than before, but they had a more specific character. The common factors had been absorbed, but the specific ones remained. Such absorbed serum is not hemolytic, but retains its power of acting on the specific antigen.

Animal Inoculation.—The most searching and conclusive method of demonstrating the specificity of the serum, however, is by means of animal inoculation. In my first paper was published evidence to show that serum developed from the selected antigen had a markedly special action on its appropriate organs. The nephrotoxin caused acute nephritis, while the hepatotoxin caused focal necroses and general granular and fatty degeneration of the liver. These lesions were acute, and caused the death of the animal.

In attempting to repeat these animal experiments with an inactive serum which he had prepared by a faulty method, Pearce drew the conclusion that "such serums have mildly toxic properties acting in a general way and affecting especially the principal excretory organ, the kidney." He admits, however, that it is difficult so to explain the severe albuminuria which I described.

I call attention again to the fact that, on the intravenous injection of the serum, an immediate reaction occurs which is much more marked than occurs with the same quantity of normal serum. This general reaction is evidently an expression of the general toxic character of the serum. It passes in a few hours, however, and the next day the animal is normal. The specific effects which prove serious are not manifest for several days, even though the serum has been given in one injection, and although the lesion may go on to a fatal termination.

Another point of interest is to be found in the fact that not all animals react alike to active serum. A serum which causes an acute fatal nephritis in one animal may cause in the same dose a milder lesion in another animal. Two dogs were given the same dose of an active hepatotoxin; one died in eight days, while the second, although severely ill, recovered after a period of two weeks.

The results which have been cited above appear to me to warrant the use of the term "special" or "specific" in their description. It is admitted that the work requires special attention to the technic, but I believe that other investigators can duplicate the results cited.

THE SERUM

The thyroid lends itself to the production of such a serum for the reason that in this gland there is stored in the alveoli a large amount of a protein peculiar to the organ, and with a peculiar chemical structure as evidenced by its remarkable selective affinity for iodin. This protein is, therefore, sharply differentiated from proteins to be found in other organs and should serve as a suitable antigen for the production of a specific serum. The review of the literature on this subject given in the chapter by Dr. Weil shows that special cell products produce antiserum having a higher degree of specificity than can be obtained by other animal antigens. Experiments showed that such a serum had highly specific properties as evidenced by its precipitin and agglutinin reactions. A serum which would agglutinate completely an emulsion of thyroid in five seconds would produce a doubtful reaction in a kidney or liver emulsion at the end of an hour. Because of the biologic specificity of protein it is necessary to use human glands in the preparation of serum for therapeutic use.

The method of preparing the serum is as follows:

Human thyroid glands are carefully trimmed free from all connective tissue, and thoroughly comminuted by a special machine. The comminuted mass is suspended in from three to four times its volume of physiologic salt solution made alkaline by the addition of 5 drops of a 10 per cent. solution of sodium hydroxid to each hundred cubic centimeters of the saline. After shaking on a machine for three hours the extraction is continued in the refrigerator for twenty-four hours additional. The extract is strained through gauze to remove the coarser particles and then filtered through paper. To the filtrate a few drops of 10 per cent. acetic acid is added and the whole heated on a water bath to 44 C. (111.2 F.). Under these conditions an abundant precipitate is formed which is thoroughly washed by decantation with acid physiologic salt solution. The washed protein is filtered out and dissolved in alkaline physiologic saline solution. The protein content is estimated and the solution diluted to 1 per cent. strength. This solution of human thyroid protein serves as the antigen.

Intraperitoneal injections of this solution are given to sheep at weekly intervals with gradually increasing dose until from 125 to 150 c.c. of the solution are given at each injection. After six injections the animals are bled, the serum allowed to separate and prepared for injection by testing its agglutination reaction, and filtration through a Berkefeld filter. The serum is sealed in ampules containing 1 c.c. to preserve it for injection.

GENERAL PRECAUTIONS

Certain precautions must be followed in administering the serum if its beneficial effects are to be fully realized. Preeminent among these are the matters of dosage and frequency of injection. It is true with this serum as with all others used for passive immunization that the magnitude of the dose best suited to afford relief varies with the clinical condition. With some mild cases of diphtheria, 2,000 units at a single injection may be sufficient, while with the others from 10,000 to 15,000 units in successive injections may be necessary. As a rule the first injections of the thyroid antiserum are borne well without local or systemic reaction of any moment. One occasionally encounters a case, however, which is unusually sensitive, and the first injection if not carefully proportioned may cause a very marked reaction at the site of injection, evidenced by a brawny swelling which may extend below the elbow, heat, redness and pain. Some general reaction accompanied by fever, nausea and general malaise is also shown. These cases are unusual, and nearly always are found to occur in neurotic persons only mildly affected by the disease. In the severe toxic forms of the disease I have at times given three injections of 1 c.c. each during the first twenty-four hours of the treatment. However, it is best as a rule to begin with a small dose, not more than ⅓ c.c., and observe its reaction before increasing the dose. A suitable method to follow in beginning the treatment is outlined below. The best site for the injection is a point midway between the elbow and shoulder on the outer aspect of the arm. The injection should be made into the subcutaneous areolar tissue. For the first injection give 5 minims (⅓ c.c.). Immediately after the injection is made apply hot compresses at the site and continue them for one hour. Following this treatment apply a wet dressing of 50 per cent. alcohol. There may be no local reaction, whatever; in the majority of cases there is a localized area of tumefaction, the skin is slightly reddened, hot and sensitive. This reaction develops in from three to seven hours to its full height and then subsides to a normal condition within a few hours. If the local reaction is negative or very mild, a second injection may be made the following day in the other arm, giving a dose of from 7 to 8 minims. The site of injection should be treated as before. The local conditions being favorable, the third injection may be made on the third day of the treatment in the first arm injected, giving a dose of from 10 to 12 minims. With a favorable local reaction the following doses should be of a full tube of the serum every second day, using alternate arms for the site of injection. In the very unusual cases the first reaction is severe and does not subside promptly. In such a case one should wait until the primary reaction has entirely subsided and then begin again with a smaller dose, from 2 to 3 minims of the serum. It is not wise to repeat the injections until the previous reaction is nearly if not entirely subsided. If this precaution is not observed, the reactions become progressively more severe, and not only is there a very troublesome reaction at the point of injection, but the previous reaction areas light up again and both arms become much swollen and intensely inflamed. A somewhat similar reaction has been observed by Gay to follow repeated injections of diphtheria antitoxin.

In some instances the smaller doses of serum are well taken and no disturbing reaction occurs until four or five injections of a full tube have been given. Then each injection causes an increasing reaction, and if continued at the same interval as before, a condition of great discomfort to the patient follows. The arm may show a brawny, painful inflammation extending from the shoulder to the wrist. It may have much of the appearance of erysipelas, and often the physician who first sees the reaction fears a severe infection. Wet dressings of ice water, the lotion of lead and opium, or 50 per cent. alcohol afford the most relief. The same rule is to be followed in such cases. Allow the local reaction to entirely subside and then begin by small doses. *It should be recognized, however, that in the majority of cases no disturbing reaction occurs; there is some local infiltration and a little heat which subside within a few hours.*

The question of a possible danger from anaphylaxis may be considered. In the beginning of the serum treatment, before the nature of and danger from anaphylaxis were appreciated, and when much larger doses of the serum were given without any relation to the time element, we had a few reactions which were undoubtedly anaphylactic in character. About ten to fifteen minutes following the injection there occurred a sensation of suffocation, the skin of the whole body itched intensely and became reddened, and particularly about the face, became edematous. The reaction was very distressing to the patient but passed in a comparatively short time. If the directions given above are followed, no danger from such a cause will arise. I have seen a few reactions of the type of local anaphylaxis described by Arthus. These never occur until a few previous injections have been given. Instead of a diffuse swelling and infiltration there is a small area of intense reaction immediately at the point of injection, and this reaction has all the characteristics of a small abscess. These rarely occur and the physician is inclined to conclude that his technic has been faulty or that the serum has been infected. In a few instances it has been advisable to open the abscess, while some of them have pointed and opened spontaneously. The contents have been sterile in every case that I have seen. There is in my opinion every reason to class these reactions with those described by Arthus, who noted that repeated injections of antigen in a partially immunized animal would occasionally produce an abscess.

It rarely happens that the needle punctures a small vein and the whole dose of the serum enters the circulation at once. If this patient has had a number of previous injections and if as much as a full tube has entered the vein there may be an immediate reaction of the following character: The patient has an intense pain in the back and experiences a sense of suffocation, the skin becomes flushed and itches intensely, and the patient is nauseated and may vomit; syncope may follow. Such a reaction, if it occurs, follows directly after the serum is injected. The patient should lie down at once, the clothing about the neck loosened, iced towels applied to head and if desired aromatic spirits of ammonia inhaled. It is quite unnecessary to do anything more, for before a hypodermic injection can be prepared the reaction has largely passed. Th whole disturbance quickly subsides and the patien aside from being somewhat frightened, is quite al right. Such a reaction is very unusual. I myself hav had only two in the last three years, and I have given thousands of injections during this time. If th physician has never seen such a reaction and does no know that it may occur, he, as well as the patient is likely to be frightened, a situation which cause much useless distress to all concerned.

The reactions which follow the injection of thi serum are no serious bar to its use, provided the conditions outlined above are carefully followed. The reactions which have been described are not the usua results. They have been described at such length in order that the physician may know all the complications and be prepared to steer a safe course. It needs no lengthy description to picture the situation where no reaction takes place. Small doses should be given at first with careful observation of the effects and a gradual increase to the full dose. If repeated injections are given without permitting a sufficient interval between times for reactions to clear up, the arms will get into a very bad condition, the patient will have a continuously high temperature and be very uncomfortable. Moreover, the desired therapeutic effect will not be obtained.

So much has been said about the severe reactions that the impression may have been made that these are the rule. Such is not the case. The majority of patients show a very mild, or no reaction. They need no particular care in this respect, but unless the physician knows what may follow the injection, he is in no position to advise the patient.

The final word may be said about the reaction. Some patients cannot at any time take more than half a tube, 8 minims, and they do not need more to get excellent results. It is not a matter of variation of the activity of the serum but is purely a question of the individual's sensitiveness. The same serum given to one patient in doses of 1 c.c. causes no reaction of any moment, while to another it may be entirely too large to be borne with comfort. Experiments are under way at the present time to find a suitable method of eliminating these local reactions and permitting a slow absorption.

It must be understood that the serum treatment is only a part of the medical treatment, and all those medical measures which have been proved of value should be instituted. It may seem trite to voice such a precaution, but my experience has shown me that many physicians regard the serum as a short cut to cure without the necessity of employing medical common sense. It is expected that a nervous, weak, sleepless, nauseated patient with a rapid, dilated, decompensated heart will make a prompt recovery after a few injections of serum and yet be allowed to conduct himself in the meanwhile as he pleases. No sane physician fails to treat a diphtheria patient as a sick person because the antitoxin has been administered. Patients with hyperthyroidism must be regarded as sick persons although they may not have such a degree of physical weakness as compels them to remain in bed. The patient, unless only mildly affected, must in the beginning of treatment have as complete rest as can be obtained. This rest means freedom from mental, emotional and physical exertion. Careful inquiry will often elicit some particular factor of work or worry which has been instrumental in causing the disease or keeping it active, and this must as far as possible be corrected. If the patient is seriously affected, complete rest in bed is necessary, and sympathetic, talkative friends rigidly excluded. The same rule often applies to members of the family from whose petty disputes and vexatious interferences the patient at times stands sorely in need of protection. Exophthalmic goiter patients are highly sensitive and often react with an explosion to trivial annoyances.

No feature of medical treatment which has proved of value need be omitted merely because serum is to be given. The time has passed in this treatment when all other means of medical alleviation may be withheld for the purpose of demonstrating the effectiveness of the serum in controlling the disease. There are a considerable number of patients who do not respond to other medical treatment, but no measure which makes for the welfare of the patient should be neglected.

ACTION OF THE SERUM

Before considering the treatment of the different types of hyperthyroid patients I wish to state briefly my ideas as to how the serum acts. It has been generally referred to as a specific cytotoxic or cytolytic serum for the reason that it is developed by the same method as the serum which had produced lytic effects in the normal organs. In my opinion the disease may be looked on as a toxemia. The tissues of the body are oversupplied with thyroid secretion, which acts as a toxic substance. Many substances are known which in small doses act as physiologic stimulants but which in larger doses are distinctly toxic. To correct hyperthyroidism we need to counteract the toxic effect of this secretion and reduce the activity of the gland to physiologic proportions without destroying it. The serum in the dose used for therapeutic purposes is not actively cytotoxic. In the experiments which served as the basis for the production of this serum, 15 c.c. of a cytolytic serum made against the kidney were administered to a dog weighing 12 kg. at one intravenous injection. Under such a dosage active cytolytic effects were observed. No comparable dose of thyroid antiserum has ever been given to a human patient. The dose of 1 c.c. to a patient weighing 50 kg. is less than one-fiftieth the amount given to the dog. Furthermore, it must be remembered that the antigen from which the serum is developed is very largely made up of the colloid of the gland, a cell product and not from the proteins of active cells. From a theoretical point of view, therefore, it is not unreasonable to suppose that the serum is largely antitoxic and not cytolytic. I believe that clinical evidence is convincing that it acts as an antitoxin and protects the general tissues of the body.

Rabbit Experiments.—Some years ago I made a series of experiments to test this point, the results of which have never been published. A number of rabbit thyroid glands were collected and the protein prepared from them as has been already described in the preparation of the human antiserum. With this antigen a small dog was immunized. Six rabbits from the same litter were then divided into two lots, one of which served as a control. Both lots of rabbits were treated by injecting them subcutaneously each day with protein from rabbit's thyroid glands. The doses were gradually increased until each rabbit received each day the protein from five pairs of normal rabbit thyroid glands. One lot of three rabbits was treated with the serum from the dog immunized with rabbit thyroid and the other lot with normal dog serum. The rabbits treated with the immune serum did not show the effects of the treatment to anything like the same degree as those given the normal serum. The latter animals lost weight and had constantly a temperature from 1 to 2 degrees higher than the protected animals.

In some of the very acute, toxic human cases the relief from the toxemia obtained by serum injection is so prompt and complete that one is strongly led to the conclusion that the action is that of an antitoxin. The conditions are such that I have not been able to obtain human glands which at one time were diseased and the cause of symptoms, and later have been restored to normal function by serum. Most persons who have been relieved of the trouble show a keen interest in keeping their glands. This twofold activity serves to explain the results which will be mentioned later. Probably if given in very large doses a distinct cytolytic effect might be shown. The purpose of the treatment, however, is to relieve the toxemia and not to cause an immediate destruction of the gland. The restoration of the gland to normal size and function is a process which often requires months to complete, and is accomplished by a mildly acting inhibition rather than by sledge-hammer blows.

APPLICATION OF THE SERUM TREATMENT TO DIFFERENT TYPES OF THE DISEASE

The primary step in treatment is the diagnosis. With the increasing interest in the subject during recent years the diagnosis is more often made, and the early development of the disease is not infrequently observed. But one of the greatest impediments to better treatment is the fact that patients so frequently wait until the condition is far advanced before seeking medical aid. And they are not entirely to be blamed for this. In the early stages the patient often appears to suffer from excessive good health. They are animated with many interests and activities; they may have no ache or pain, the appetite is excellent, often extraordinary, they sleep well, and except for breathlessness on exertion appear to themselves to be quite well. The physician does not usually have an opportunity to treat them at this stage and such a result is in part due to the fact that the diagnosis is frequently not made when it should be. As an example of this point my own experience of the last year will serve. Only a very small proportion of my patients apply for general medical treatment, and yet in one year I have found twelve whose real difficulty was hyperthyroidism, which was promptly relieved by proper treatment. All had had medical advice from a number of physicians who had not discovered the difficulty. If in a comparatively small number twelve proved to have been wrongly diagnosed, I am sure that men who have a large general practice frequently fail to appreciate the nature of the disease. So much depends on the presence of exophthalmos that it is unfortunate that it has been described as one of the cardinal symptoms of the disease. No one factor in the medical treatment of the condition will be of more help in the treatment than an early diagnosis.

For the purposes of this article the different types of the disease will be classified under six heads:

1. The early mild cases in young women from 12 to 20 years of age.
2. The early typical cases in patients over 20 and under 40.
3. The well-advanced typical cases.
4. The acute toxic inoperable cases.
5. The severe advanced cases of long standing.
6. The atypical cases.

Group 1.—Young women in school and college, shop girls and debutantes not infrequently react to overwork and undue excitement by showing an enlargement of the thyroid gland which often develops quite rapidly to a point where it attracts attention. As a rule they do not show much if any exophthalmos but they are physically weak, the heart rate is above one hundred and very sensitive to physical exertion, tremor is well marked, and the skin is flushed and sensitive. They show all the evidences of a mild hyperthyroidism. (It is not my purpose here to enter into a complete description but merely to outline the condition so that it may be recognized.)

These patients may not need serum at any time. It is my practice not to give serum to them until they have been under treatment for two or three weeks. They must be put at rest, school, college and social activities stopped, and complete relaxation obtained. Attention must be given to the general medical conditions regarding sleep, diet, stomach and bowel conditions. It has been my experience that the syrup of ferrous iodid in 15 or 20 drop doses in ½ glass of water after meals is one of the best tonics that can be given to such patients. In some cases I give also the neutral hydrobromid of quinin in 3 or 5 grain doses twice a day. They will need to be under restraint for from six to ten weeks and should not resume full activity for from four to six months. Most of them show early improvement and they may not need anything further to effect a complete recovery. If the conditions do not begin to improve promptly or if it is delayed, the progress may be hastened by the use of serum. In these cases the beginning doses should not be larger than 5 minims and the injections need not be made oftener than three days. The dose is gradually increased, allowing the reaction to subside entirely before repetition of the dose. The length of treatment required varies with the case, but the limit given above covers the majority. After the condition is well controlled the injections should not be stopped abruptly, but the interval should gradually be increased until finally they may be made every ten or twelve days.

Group 2. —In this group the same symptoms may be shown and the condition may arise from the same causes, but there are many cases found here that have had a so-called simple goiter for years without symptoms, that under the pressure outlined above, with the additional factor of pregnancy, have become troublesome. It is probable that many of these patients have shown exacerbations of a milder form before but have not sought medical help. These patients are not, as a rule, so quick to recover as those in Group 1. The same general plan of treatment is to be followed. It is advisable to begin serum treatment at once with most of these patients and it will need to be given for a longer time than in Group 1, and the additional duties and distractions incident to their age make them somewhat harder to control.

Groupe 3.—The patients included in this group have had the disease in a well-marked form for a long enough time to have permitted its characteristic effects to be well marked. No uniform length of time is required to produce these changes. They may occur in cases of only a few months' standing or it may require several years. Recovery need not be expected in this group for several months and the patients should be frankly told that they cannot expect immediate recovery and that their habits of life for at least one year will need careful regulation. It is useless to put such patients to bed for two or three weeks, give them serum and tonic treatment during this time and then expect them to resume normal life and all its activities again. I have often had remarkable improvement during such a period, but unless the condition is considered a serious one by both the physician and patient, much disappointment is bound to result. The serum injections will need to be continued at two to three day intervals for four or five months, bearing in mind what has been said heretofore about the reaction. When the patient has gained weight and strength, is sleeping well, and has a pulse rate of from 90 to 100, the interval may be increased, but this increase must be gradual with the patient under careful observation and a return to the former interval if there is a failure to control the symptoms. Serum must be continued often for a year before it is safe to stop altogether. I have at present under my care three cases that belong in this group in which the patients have made an excellent recovery after fifteen months' treatment. Another patient with a history of the disease for three years has made a recovery after five months' treatment; but such a favorable outcome is not the rule. Again I wish to emphasize the necessity of using medical common sense in dealing with these patients. If the physician confines his services to the injection of serum it is certain that failure will be a common event.

It is hardly a feasible matter to discuss serum treatment as means of treatment by itself for the reason that one rarely uses serum as the only therapeutic measure. In the patients in this group certain general statements may be made respecting the use of other medicines. After the symptoms have been well controlled, it is often a decided advantage to give the patient a tonic. Neutral quinin hydrobromid is often helpful at this time. Iron, arsenic and strychnin are at times necessary. The administration of iodin in small doses may be of great value. After the toxemia of the disease has subsided iodin may be given in small doses. Not more than ½ grain of potassium iodid three times a day should be given as a beginning, but its administration should be continued over a long period of time. If the dose is increased it should not be a sudden increase to a large dosage. Even after the symptoms are well controlled the administration of iodin in doses which would not ordinarily cause any disturbance may be followed by a sharp exacerbation of the disease. It is quite erroneous to suppose, however, that iodin can never be given to a hyperthyroid patient with any benefit. Large doses should never be given, and even with small doses the patient should be under close observation until his sensitiveness to it has been determined. The use of thyroid extract with patients in this group is a matter which requires considerable experience before proper cases can be selected. If given during the early stages of the treatment it is quite likely to cause a marked exacerbation of the symptoms. Every year I see a number of patients who have been severely injured by the free administration of thyroid extract given to reduce the size of the goiter. Not infrequently a patient appears with severe symptoms of hyperthyroidism after a period of thyroid treatment to reduce weight. The commercial sale of thyroid for this purpose should be prohibited.

Group 4.—The patients in this group are severely affected by the disease. A considerable percentage of them die from the toxemia, and it requires the most exacting care to bring such a patient through to complete recovery. The development of the disease may be rapid from the start, but in the majority it will be found that a mild condition of hyperthyroidism has been present for some time, and for various reasons has developed into an acute toxic condition of grave prognosis within a few weeks. The disease in this form presents roughly two types; the *asthenic* type resembling to some degree the profound physical prostration of Addison's disease, and the *sthenic* type in which there is not such profound prostration and evident toxemia, but tremendous stimulation of the nervous system with symptoms that resemble in some degree those of chorea major. To present the characteristics of these two groups it seems best to describe a patient in each class.

CASE 1.—*Asthenic Type.*—The patient was a woman aged 27, married for three years. She had always been a thin, wiry woman weighing from 110 to 120 pounds, very quick in her movements and unusually keen mentally. There was a history of rather rapid gains and losses in weight within the limits mentioned above. She had had measles, whooping-cough and mumps as a child, but as an adult had never been sick with the exception of an occasional sore throat. Examination of her throat revealed the right tonsil somewhat enlarged with the left one absent except for a few tabs of lymphoid tissue. Four years before the present illness she had had a peritonsillar abscess on the left side. The throat had been full since her first menstruation, which occurred at the twelfth year. Goiter had not been observed until attention was called to it during her present illness. She had passed through a normal pregnancy and had given birth to a healthy child eight months previously. For a few weeks before her present attack she had noted that she tired more quickly than usual, was out of breath climbing stairs and at times had palpitation. Her sleep had not been good for a few weeks and she had frequently had severe headaches. She had always been constipated. For two weeks before her present illness began she noted that her bowels moved from one to three times a day without a cathartic. Present attack followed a week of unusual social activity. She returned from a function at which she had danced many times feeling very tired, and had gone at once to bed and to sleep. At 6 a. m. she awoke with a very uncomfortable feeling about her heart, she had a severe headache, was nauseated and vomited twice. From this point she grew steadily worse until I saw her two weeks later at which time her condition was that described below. There was no exophthalmos but the lids remained half closed. Both lobes and isthmus of the gland were moderately enlarged, hard and somewhat nodular.

The blood-pressure varied from 100 to 120. Pulse at the wrist was small, thin and rapid. Abdominal aorta, however, had a marked pulsation; the heart did not have the heaving impulse often seen in this condition, the apex beat was diffuse and best felt about 4 inches from midsternal line. The pulse-rate varied from 150 to 180. At the slower rate a distinct systolic murmur could be heard over the apex. There was a prominent pulsation in the veins of the neck, and a marked thrill over the gland. The skin was at times dry and at others moist on soles of feet and palms of hands. The patient was restless but moved with difficulty. Physically she was extremely weak and could scarcely articulate in answer to questions.

She had no appetite, and the tongue was dry and heavily furred except at the borders of the tip which were red with the papillae raised. She could retain practically no food, complained of nausea, abdominal tenderness and was altogether a very sick patient. The temperature by rectum varied between 99.5 and 101.5.

Mentally she was extremely depressed, at times almost like a melancholia, and could not properly orient herself with respect to time or her surroundings. She often had great difficulty in choosing the proper word to express herself and would then break down in a fit of weeping. Sleep was induced with the greatest difficulty. She did not respond well to the usual hypnotics and had been almost entirely sleepless for three days and nights at the time I first saw her.

Treatment.—It is in cases of this kind that serum treatment has shown its most striking results. The patient was evidently overwhelmed by the toxemia. A preliminary injection of 8 minims of serum was made at once. Six hours later a full tube, 16 minims, was given into the other arm. That night the patient slept quietly without hypnotics for a period of ten hours. There was only a very slight reaction at the point of the second injection and none at the first. Injections of a full tube of the serum were given twice on the second day of the treatment, and thereafter a full tube every day for a period of ten days. At this time a marked reaction developed at the point of injection so that an interval of four days elapsed before more serum was given. From that time the treatment was continued in practically the same manner as has been described for the previous group. The effects of the injections were at once apparent. The toxemia was controlled from the beginning; the patient began to eat on the fifth day with fairly normal appetite and digestion although it was necessary to use a mild cathartic for two months. After nine months' treatment the patient made a complete recovery. At the time treatment was begun the patient had emaciated to a skeleton. During the period of treatment she gained 58 pounds.

The case has been described in detail for the reason that there are few clinical descriptions of this type of the disease in the literature, and because it is an example of a toxic case in which full doses of the serum were needed to control the toxemia. It cannot be concluded, however, that every such patient will need treatment in the same manner. In another patient of the same character even more of the serum was given during the first few days of treatment. It has been my observation that such patients will often take these comparatively large doses of serum without any disturbing reaction in the beginning of the treatment. But it is not safe to conclude that they will not so react, or that even if they do not react in the beginning that they may not later.

CASE 2.—*Sthenic Type.*—A married woman aged 24, the mother of two children, aged 6 and 3 years, had always been a thin woman of a nervous temperament while her two sisters were of larger frame and weighed from 60 to 70 pounds more than the patient. Aside from the infections of childhood she had never had any serious illness, and had always considered herself well, although a picture taken two years before showed a marked exophthalmos and evident goiter. During the previous summer she had lost weight, and noticed that although she had a voracious appetite and consumed large quantities of food, she did not gain weight, and became breathless on slight exertion. She had become very talkative and irritable in the last month, although her appetite continued good. During the last two weeks she had slept but little and did not respond to hypnotics. She had never had headaches, but during the last month had from eight to twelve bowel movements daily and for a week preceding treatment had been nauseated. A physician was called two days before I first saw her at which time she had first taken to bed because of a severe attack of paroxysmal tachycardia, accompanied by nausea and vomiting.

At the time of my first visit the patient was very thin but had not reached the degree of emaciation frequently seen in this disease. She was exceedingly restless, constantly rolling from side to side and moving her legs and arms almost continuously. At times her arms and hands were thrown violently about in aimless movements. The skin was flushed and sweating profusely; dermographia was shown by an intense reaction. She had a marked exophthalmos. The gland was much enlarged, smooth and elastic, the right lobe being larger than the left. She had a temperature of 101 by mouth. The pulse was rapid, varying from 160 to 200 and irregular, at times uncountable, soft and of low tension. The cardiac impulse was diffuse, feeble during the rapid systoles, heaving and forcible during the slow beats. A loud systolic murmur was heard over the apex and body of the heart. The abdominal aorta showed a violent pulsation. The blood-pressure was 110 mm. Mentally the patient was on the verge of mania, her thought directed to a great variety of subjects within a minute, at times laughing inordinately at nothing and shortly thereafter having a fit of weeping.

The tongue was dry and red, the papillae swollen and the throat dry, although the patient consumed large amounts of liquid.

The slightest excitement caused a great reaction in her pulse and mental condition. She had heard the question of operation mentioned the previous day and had not recovered from the shock it gave her.

Treatment.—A full tube of the serum was given, immediately followed by 1/8 grain of morphin and 1/200 grain of atropin by hypodermic injection. She quieted in a half hour and that night slept for six hours quietly. The temperature the following morning was 99 by mouth. The following three days she received a full tube of serum each day. The last injection caused a small local reaction so that a day's interval was allowed to elapse before the following injection. Because of the local reaction, serum from this time could be given only at forty-eight-hour intervals. The patient had only the one dose of morphin and no hypnotic during the remainder of the treatment. The temperature remained normal after the third day, the excessive restlessness gradually quieted, the nausea was relieved and three weeks after treatment began all evidence of the previous severe attack had disappeared. The patient was now a thin woman, with a pulse of from 110 to 120, an excellent appetite, sleep normal, the exophthalmos had diminished, and the mental condition was normal. The patient continued to make an uneventful recovery, the treatment being continued for a period of eight months; but in the latter part of that time injections were given at ten-day intervals.

It is in these very severe types of the disease that the antitoxic properties of the serum are best shown. The relief obtained in such patients is often quite as striking as that obtained in diphtheria from the administration of the antitoxin. After the severe toxemia is relieved it is generally necessary to continue the treatment for some time to produce final satisfactory results. In a few instances I have had patients in this group of acute development recover with the same promptness that they might from an acute infection of the same severity.

Group 5.—In this group are placed the patients who have had the disease in a chronic form for many years. They may have been damaged beyond the possibility of complete repair, and the whole organism is in a condition of disorganization. In some instances the digestive apparatus has suffered the most, in others the heart is most seriously injured. There is a tendency as the disease progresses to become less typical in its manifestations and to express itself more markedly in disturbances of some particular function. The patients must be studied individually with great care to be sure that they are still in a condition of hyperthyroidism. Patients in this group are not as favorable subjects for any form of treatment as those previously described. Treatment must be continued for a longer time and with greater watchfulness for complications. Serious mental breakdowns, diabetes and nephritis are occasionally found, intercurrent infections not infrequently prove most disastrous and the task of the physician is hard and tedious. Some patients in this class I have treated for two years with serum with an ultimately satisfactory result. Others have not been benefited so much and have likewise failed of improvement after operation. As a rule, however, serum will produce good effects if the gland is still in a condition of marked overactivity. If three months' serum treatment produces no decided benefit it is in most cases not worth while to continue. The benefit is in most cases subjective in the beginning; the patient feels better although no decided change may be seen in the pulse rate or the nervous phenomena. Gradually the nervous condition improves, the patient gains weight on the same diet, and gains strength and self control as the hyperthyroidism diminishes. It is not necessary to give additional specific directions for the use of the serum in this group.

Group 6.—*The Atypical Cases.*—The atypical cases are the most unsatisfactory to treat of all forms of thyroid disease. Patients in this group often show the most bizarrre combinations of hyperthyroidism and hypothyroidism, and have many indications that other ductless glands, pituitary and pancreas may be involved. Serum treatment has a very limited application in this group. If the hyperthyroid symptoms are decided, serum may be tried, and occasionally a brilliant result will follow. As yet we have no satisfactory laboratory method for determining the presence of an oversupply of thyroid secretion in the blood. Therefore, a careful analysis of the symptoms and all attendant features of the condition must be made. Extracts from other ductless glands such as thyroid, pituitary, adrenal and pancreas, are in suitable types indicated. This group of cases can be presented only by citing in detail a considerable number of case histories with the method of treatment followed; and such a procedure is beyond the province of this paper for the reason that serum treatment plays such a minor rôle.

SOME CONSIDERATIONS CONCERNING SERUM VERSUS SURGICAL TREATMENT

The surgeons prefer early cases and urge the physician not to wait until the disease is so far advanced that secondary changes of a serious nature have resulted before recommending the patient for operation. Undoubtedly the best results from operation are to be obtained by operation in the early stages of this disorder, but the same holds true precisely of the proper medical treatment including serum treatment. If operation is to be performed in the early stage of all hyperthyroid cases, much needless surgery will result.

The surgeon employs the means with which he is most familiar to effect a cure; he is accustomed to a quick solution of the problem, and as a rule is unwilling to guide the invalid patient through a somewhat prolonged course of treatment. My experience in the treatment of this condition has led me to the conclusion that much needless operating for its relief is now the practice. Disregarding the dangers attendant on the operation, it is my belief that from the physiologic point of view it is better practice to enable the patient to recover and keep the gland than to remove it to effect the same end. And in saying this I do not disregard the large factor of safety in the gland, or the argument that only diseased, useless tissue is removed. When the whole gland is involved in the pathologic process, as it frequently is, it must be assumed that the portion remaining after operation is restored thereby to approximately a normal condition. It is possible in a large percentage of cases to restore the whole gland to equally good conditions by serum treatment and leave the patient with the factor of safety provided by nature. A large proportion of hyperthyroid patients are under 35 years of age, and the physiologic function of the gland decreases somewhat with age; besides, there is a well-recognized progress in the overactive gland toward a condition of hypo-activity. The question may be considered, therefore, whether the patient who has been operated on may not suffer at a later period of life from too little thyroid function. The operation has not been in vogue long enough to answer this question accurately, and the statistics of any one surgeon are likely to be incomplete because of an inability to trace the patient. It may be argued, of course, that the immediate condition demands relief regardless of any hypothetic difficulty in the future. But is it not wise to give the patient relief by a means which insures as far as possible safety in the future from lack of thyroid function? And it must recognized that relief from hypoactivity is not to be completely obtained by the simple administration of thyroid extract.

It is not my purpose in making these statements to visit a sweeping condemnation on the operative treatment. No one with any experience in the disease can question its place as a valuable therapeutic procedure, and I am quite willing to grant it the first place; but it is my opinion that operation should not be undertaken as a first resort without a careful consideration of all the factors. It has too often been decided merely on the consideration as to whether it is a surgical possibility to operate without losing the patient. Unless the indications are very clear, the patient should have the benefit of medical treatment, and in my practice this generally includes serum treatment before operation is undertaken.

The surgeon argues for an early opportunity to operate and not seldom speaks of the medical deaths which might have been avoided. The physician, on the other hand, often has his patients returned after operation without benefit. The surgeon may refuse to operate when conditions are unfavorable, but the physician cannot refuse his services merely because the patient is desperately ill. So that in considering the statistical results from the two methods of treatment some consideration must be given to the fact that surgical cases are to a considerable degree selected. Not infrequently the patient refuses operation or seeks medical aid at a time when operation is not to be considered. The physician cannot take the point of view occasionally voiced by the surgeon that other treatment than surgery is useless.

SERUM TREATMENT AS A PREPARATION FOR SURGICAL OPERATION

Many physicians and most surgeons feel that the surgical removal of a portion of the gland is the only safe method of treating this disease. These men are inclined to feel that the patient is not safe from a relapse unless the overactive gland is largely removed. There is no question that operation is a necessity with some cases and advisable in those patients who are unable or unwilling to be treated medically. In some cases surgery is determined on from the beginning and it is desired to put the patient in the best possible condition for operation. The administration of serum for this purpose accomplishes such an end effectively in most cases. It must be remembered that not all cases respond equally well, and the mode of treatment is not different than would be followed if no operation was to be done. The relief of the nervousness, quieting of the heart and the gain in strength prepare the patient most excellently for the ordeal of operation. Some care will at times be necessary not to carry the period of preparation too far, or it may result in such complete relief that operation will be refused. The danger of severe hyperthyroidism following the operation is lessened, and the period of convalescence hastened if the active symptoms have been controlled by serum. These statements are not hypothetic but are based on the experience obtained from operation in many cases. Not infrequently the serum has been used to control the symptoms of acute hyperthyroidism following operation. The surgeon has not expected the explosion to occur, but it would seem better practice to prepare the patient in advance by giving a supply of thyroid antitoxin than to control the toxemia after it has once begun.

SERUM TREATMENT AFTER OPERATION

It is by no means rare to see cases that have not been much improved by the ligation and excision operations commonly employed. The portion of gland remaining may or may not have grown, but the symptoms are nearly if not quite as troublesome as before. In some instances there has been a short period of partial relief immediately following the operation with a gradual relapse later. Further operation is not feasible and the patient seeks relief in medical treatment. These patients often respond quickly and it at times appears that the removal of a portion of the gland shortens the period of treatment necessary to control the remainder. There is a limit to the amount of serum which it is feasible to give to any patient at one time, and there appears to be a relation between the amount of serum given and the toxemia which it is to control. When there is only one-fourth of the gland remaining, the antitoxic and inhibitive action of the serum is quantitatively more effective than when it is required to combat the whole gland. I have not infrequently seen serious relapses in such patients completely controlled in six weeks. On the other hand, patients who have been operated on are often in desperate conditions on account of complications of the heart, kidney and digestive tract. Such patients need to go to the hospital for a general overhauling in addition to serum administration. And it may be discovered that serum treatment is not indicated. In maintaining a brief for the medical treatment I do not wish to have it appear that surgery has no place in treatment, but I wish to emphasize most emphatically the fact that many patients who have been operated on are by no means cured and that they often require prolonged and careful medical treatment to restore them to health.

RESULTS OF SERUM TREATMENT

The serum has been used in the treatment of more than 3,000 patients having hyperthyroidism of different degrees. From the classification given earlier it will be seen that these patients cover the very severe cases as well as the mild, early cases. The precise result which will be obtained with any given patient cannot be precisely foretold. Such a situation confronts the physician, however, in every field of therapeutics. Experience with the serum and with the disease is an important factor in the treatment. Physicians are occasionally unwilling to take the time to learn the necessary precautions and nearly always come to grief. I recently saw a patient whose physician had ignored the careful directions given him and persisted in giving a full tube of the serum every day for a week in beginning the treatment in spite of the fact that each injection caused a reaction of increasing severity, and no time was allowed for these to subside before repeating the dose. Such carelessness is most culpable. The patient was in a very uncomfortable condition with a continuous temperature of from 101.5 to 102, sleepless, nauseated and with a general cutaneous erythema. Each point of injection was represented by large, red, indurated, intensely painful areas. Two of these pointed and discharged a quantity of thin, sanious fluid containing numerous mononuclear cells, but cultures gave negative results. It required two weeks of careful attention before the patient recovered from the effects of this malpractice. This instance is cited because I wish to emphasize the fact that the results of treatment depend in large part on the care and intelligence with which it is directed.

The results of the treatment may be classified as follows:

Fifty per cent. of the patients have been cured in the sense that they are strong and able to meet all the demands made on them. They are of normal weight, have a normal heart, have no tremor, are not nervous, have no gastro-intestinal disturbance and perform all their accustomed tasks without undue fatigue. In some instances the goiter, although much reduced in size is still enlarged, and in others exophthalmos persists to noticeable degree. Some years ago one of the best-known surgeons who operate for this disease stated that in his experience no patient who had the disease in a well-marked form ever made a complete recovery by any treatment. And he defined complete recovery by stating that he meant that no symptoms of the disease should be evident. This conservative statement may be contrasted with that of other men who claim from 85 to 90 per cent. complete recoveries. I am able to state, however, that a large portion of the 50 per cent. included in the list of cured as first defined show no evidences of the disease, and are normal persons. They pass rigid physical examinations and would never be suspected of having had the disease at any time. None of the cardinal or secondary symptoms can be discovered.

Thirty per cent. of the patients treated show a very marked improvement, to such a degree that they meet all the usual demands of life without undue reaction. Under unusual physical or emotional strain they react more than normal persons do. The two symptoms which are most evident with them are a gland larger than normal, and in many cases a mild exophthalmos. Some of this group ultimately improve to a point permitting them to be called well.

The remaining 20 per cent. includes those who have not been so markedly benefited, those who have been operated on, those who have not been benefited and those in whom the disease has proved fatal. The percentage of fatal cases in patients who have had serum treatment for a period of six months is very small.

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ENDAMEBIC PYORRHEA AND ITS COMPLICATIONS

A PRELIMINARY NOTE *

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The study of the relation of pyorrhea and oral foci of infection to systemic disorders of a probable toxic origin received a marked stimulus from the recent discovery of the causative relation of endamebae by Smith and Barrett,[1] 1914. In their study, the presence of the *Endamoeba gengivalis* Gros,[2] 1849, was constant in forty-six cases of pyorrhea. The independent works of Chiavero[3] and Bass and Johns[4] corroborate the constancy of this finding in gingival infections.

Prior to this investigation, the extensive clinical and experimental research in the subject of oral sepsis had shed considerable light on its relation as a distant focus for systemic toxemias. Hunter[5] had long advanced the theory of an oral septic origin for numerous systemic disturbances, more notably, pernicious anemia. More recently, Billings, Rosenow and others had emphasized the importance of oral sepsis as a factor in remote general conditions. The efficacy of autogenous bacterial vaccines had been tested, and the variability of results both locally and generally had opened the question of a possible complexity of causative factors.

The application of the specific drug for the treatment of amebic dysentery, ipecacuanha or its active principle, emetin (alkaloid), to the treatment of an analogous condition in the mouth, was the next rapid step in our knowledge of pyorrhea. Two modes of procedure have been followed. The first, that of Smith and Barrett, was the local injection or application to the affected gums of a weak emetin hydrochlorid solution. At first a 1 per cent. solution of the hydrochlorid proved irritant in some cases, so that a strength of 0.5 per cent. has since been administered. The customary routine has been daily injections of a small portion, often only a fraction of a drop of this solution, into each pocket. Smith and Barrett,[6] in their preliminary report, noted the marked improvement to complete cure of thirteen cases of Rigg's disease so treated. Since that time many cases of correspondingly good results have been added to their list. Several ingenious devices have been evolved to meet the demands in certain cases referred by us to dentists. The use of air pressure to separate the gum from the tooth has been of assistance in some instances (Dr. S. H. Chase). The use of blunt-pointed needles (Dr. Kent Wood) and the replacement of the hypodermic needle by a dental file (Dr. E. J. Hart), the hanging drop of emetin solution adapting itself by capillarity to the smallest pockets where no needle could be introduced, have both been valuable refinements. The application of a heavy petrolatum to the gum margin after each treatment appears of value. Barrett, in a more recent article,[7] has carefully covered the ground of the surgical dental care, which must supplement any specific treatment.

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* From the Department of Clinical Medicine, University of Wisconsin.

[1] Barrett: Dental Cosmos, August, 1914; ibid., December, 1914.

[2] The term "Endamoeba gengivalis" Gros, 1849, is substituted for "Endamoeba buccalis," Prowazek, 1904, at the suggestion of Dr. Allen J. Smith, whose studies of the original articles prove beyond a doubt the priority and accuracy of Gros' description and observations.

[3] Chiavero, Angelo: Abstr., Dental Cosmos, September, 1914.

[4] Bass and Johns: New Orleans Med. and Surg. Jour., 1914, lxvii, 456.

[5] Hunter: Brit. Med. Jour., Nov. 19, 1904.

The more recent announcement of Bass and Johns of their discovery of endamebae in eighty-five out of eighty-seven cases of Riggs' disease, and of its rapid subsidence after the subcutaneous administration of emetin hydrochlorid, constitutes the proof of the efficiency of a second method of treatment or of administration of the specific drug. Smith, Middleton, and Barrett,[8] in a recent study of tonsillar endamebae and their relation to systemic disturbances, noted in several cases the disappearance of endamebae from the cryptic contents on the subcutaneous administration of emetin hydrochlorid.

The present study constitutes a brief preliminary report of a series of cases under observation in the University of Wisconsin Medical Clinic. In all, seventy-two oral cases have been examined by the usual method, heated stage, warm slide and cover slip, the material scraped from the depth of the pocket being immediately mixed with warm normal saline and mounted. Seventy cases showed endamebae ranging in size from 8 to 32 microns in diameter, filled with granular material but no contractile vacuoles; the pseudopodia varied widely in size, length and activity; the ectoplasm was decidedly hyaline, and only after an interval was there an outpouring of the granular endoplasm into the newly formed hyalin pseudopod. These amebae fall under the heading of *Endamoeba gengivalis* Gros. The type *Endamoeba kartulisi* Döflein, 1901, was associated with the *Endamoeba gengivalis* in two cases. According to the literature, the differentiation of these two types is to a great degree based on the difference in the size and activity of the pseudopods, those of the *kartulisi* being much broader and more active. Of these two points there could be no doubt in the cases noted; but an added differential point was observed, namely, the refractive quality of the substance of the pseudopods of the *kartulisi* was much more marked than that of the common forms. Indeed, the difference was almost that of hyaline and waxy renal urinary casts. An unclassified ameba was noted in two cases of pernicious anemia along with the type gengivalis. This ameba possessed a definite endoplasm and ectoplasm, was from 10 to 30 microns in diameter, its pseudopodia were rapidly thrown out, frequently subdividing, but never was there noted an outflow of the very highly refractile granular endoplasm into the pseudopodia. The two negative cases showed considerable gum retraction with dentine erosion.

A point to which our observation has led us to attach considerable importance is that of the mechanical interference by metallic filling and crown or plate attachments with the normal adaptation between the crusta petrosa or cement and the gum or pericementum (ligamentum circulare dentis of Kölliker). Invariably such cases have shown pyorrhea in these localities. Whether this is a constant finding and whether the presence of an irritating foreign body determines the condition, we cannot judge at this time.

Of the seventy pyorrhea cases with amebae present, fifty-four were treated by the local injection of 0.5 per cent. emetin hydrochlorid solution. The results were practically uniform in the marked improvement of the pyorrhea. The period of treatment varied from four to twelve days, with an average of about seven. In a few instances the patients complained of "tender" gums, but the great majority remarked early in the course of their treatment on the new experience of an ability to brush their teeth without the pain or the bleeding noted prior to the treatment.

After an interval of from several days to a week following the last treatment, which corresponds to an apparent local cure, a reexamination for amebae was made. Even though the second examination was negative, as a precautionary measure, a subcutaneous course of emetin was instituted. Two plans of dosage were followed: a series of small doses, daily ⅛ grain doses of the hydrochlorid for eight days, or a shorter series of larger doses, ½ grain repeated with a day intervening followed by ¼ grain on two successive days. The reason for this supplementary treatment has been to insure the death of any endamebae penetrating the deeper tissues of the gums, and therefore possibly unscathed by the local injections. Another rational procedure would be periodic subcutaneous injections, say at monthly intervals over several months, to prevent the multiplication of encysted amebae which resist the biochemical amebicidal action of ipecac.

Only five cases have been treated with subcutaneous injections alone. The results in these have been entirely satisfactory, but with ambulatory cases we have not felt justified in using the rather large doses suggested by Bass and Johns. To us, this very fact constitutes a real drawback to the use of the remedy subcutaneously alone.

The constitutional manifestations associated with endamebic interstitial gingivitis are the disturbances attributable to a toxemia of any other origin. Fifty-two, or 74 per cent. of the seventy pyorrhea cases showing endamebae, displayed constitutional symptoms or disturbances of more or less marked degree. We have endeavored to group the constitutional derangements in these cases attributable to a toxic factor under several heads: (*a*) arthritic, (*b*) neuritic, (*c*) digestive, (*d*) hemic, and (*e*) miscellaneous.

Under these headings twenty-six individuals, 50 per cent. of the persons exhibiting constitutional symptoms, or 27 per cent. of the total endamebic pyorrhea cases, showed arthritic symptoms of varying degrees, most frequently, however, of the type denoted as arthritis deformans. Six persons, 11 per cent. of the total constitutionally affected, consulted us for neuritic involvement, and a similar percentage showed hemic changes. Two patients suffered from obscure digestive disturbances. The remaining thirteen individuals fall into a miscellaneous group, whose components cover a wide range. Certain of these will be discussed individually. In such a broad general classification we have been forced to pick out the most prominent symptom of a toxic complex, and we have therefore sacrificed the complete picture for the purpose of presenting its most evident detail.

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[6] Barrett: Dental Cosmos, August, 1914.
[7] Barrett: Dental Cosmos, December, 1914.
[8] Smith, A. J.; Middleton, W. S., and Barrett, M. T.: The Tonsils as a Habitat of Oral Endamebas, The Journal A. M. A., Nov. 14, 1914, p. 1746.

The application of a specific drug for the relief of a supposedly specific infection is an acknowledged therapeutic principle. The further application of this principle to the relief of remote conditions complicating the original specific lesion is justified. However, in this instance we are not compelled to assume an amebic character for the remote disturbance arising from the primary gingival focus. The mere relief of a focus of toxic absorption frequently explains the subsequent alleviation of a toxic derangement.

Seventeen of our twenty-six arthritic patients have received local treatment with marked improvement or the absolute relief of the interstitial gingivitis in all cases. Of these patients, ten have experienced decided improvement subjectively in their joint symptoms; three have had but slight relief from their arthritic pain, and the remaining four have shown no definite change. Two arthritic patients not treated locally, together with thirteen from the foregoing group undergoing local treatment (nine of these were improved and four unimproved under the local care), have been treated by the subcutaneous administration of emetin hydrochlorid. Of the four patients unimproved by local treatment of the gingival condition, none has shown maintained improvement even under the combined treatment. Two of these to the roentgenogram show well-marked osteo-arthritis. A third is undoubtedly a case of traumatic bursitis, in which the arthritis is a secondary factor, and the fourth is a very extreme long-standing case of arthritis deformans. In all, nineteen cases of arthritis have received the various forms of treatment with no apparent improvement in four cases, with indifferent results in three, but with decided unmistakable improvement in twelve cases, 63 per cent. of those treated, two of these being treated by the subcutaneous method alone.

The group of neuritis cases has been disappointing because of our inability to follow the subsequent course of five of the six persons referred to dentists for local care. The only patient returning for the supplementary subcutaneous treatment has shown no change in the neuritic condition.

Of the two cases with digestive derangement as the prominent symptom complex, both were improved by local treatment, further improvement being noted in one following the administration of emetin hydrochlorid subcutaneously. In both cases malnutrition was the most important factor, though neuroses usually attributable to general toxic disturbances were manifest. We believe that the improvement in these cases was due partly to the removal of a toxic focus, thereby correcting a metabolic disturbance, and partly to the betterment of the local condition in the mouth, which was followed by improved mastication and increased appetite.

The six cases with hemic disturbances included two cases of pernicious anemia, and four simple secondary anemias of rather moderate grade. We have been unfortunate in our inability to follow the pernicious anemias. One of them was started on emetin subcutaneously, but a return of a previously existing gastro-intestinal disturbance made its continuance inadvisable. A gain of up to 500,000 in the total red corpuscle count was noted in several of the secondary anemias on the removal of the gingival toxic focus by the emetin treatment. Similar changes in the blood picture of several cases grouped elsewhere have been noted after the subsidence of the pyorrhea.

We freely admit a question of doubt as to the etiologic relation in the group of miscellaneous conditions associated with pyorrhea. However, the relief of certain remote symptoms and conditions, which undoubtedly had a toxic focus as a basis, under the emetin treatment has led us to include the whole number. For instance, a case of obstinate uncontrollable headaches, whose source could not be discovered, responded quickly on the relief of a pyorrhea. A still more obscure case of marked splenic enlargement or tumor without a blood picture characteristic of any pathologic lesion was observed for two months without a diagnosis and without any change in size. There was, however, a most extreme pyorrhea. The local improvement in this condition under the local use of emetin hydrochlorid was attended by a reduction of the splenic tumor of 1½ inches in both the longitudinal and transverse diameters; a total reduction of over 2 inches in both diameters has followed the combined local and subcutaneous administration of the same drug. Other associated conditions noted in this miscellaneous group include accessory nasal sinusitis, endocarditis, continued unexplained leukocytosis, and the toxic cases falling under a broad, general heading of lowered nutrition and lowered general vitality. Among this type of cases only continued treatment and observation can possibly note a change of condition. Additional cases of the nature of visceral parenchymatous degenerations, as occur in the myocardium, liver and kidneys in any toxemia, will possibly be noted in the pursuance of this study.

The question of local reaction on the subcutaneous injection of emetin hydrochlorid in our cases has been most interesting. For instance, a case of arthritis whose pyorrhea has been cleared up by local treatment will show no reaction at the points of subcutaneous injection of two successive half-grain doses of emetin. On the third or fourth dose of only ¼ grain, a most marked local reaction in the form of a wide, indurated areola of inflammation about the point of injection occurs. This local reaction may be attended by a temporary exacerbation of the general symptoms, usually followed by a marked improvement. We have been led to think of this reaction as an index of a point of saturation, when, with the death of numerous amebae the strength of emetin in the blood having reached a lethal point, a great amount of bacterial and possibly amebic toxin is liberated. Of course, this explanation is tentative, and subsequent observations may rule it out, but the alleviation of the general symptoms succeeding such an occurrence strongly supports this view.

As to the manner of the production of the toxic reaction in structures remote from the gingival focus, the several explanations advanced by Smith, Middleton and Barrett[8] might be quoted:

> Much must depend on the local circumstances governing absorption, and much, too, must depend on the number and type of associated bacteria. Whatever *other* relation may obtain between the amebas and the accompanying vegetable

micro-organisms, one may be certain that the amebas feed largely on the latter; and in this bacterial phagocytic action they doubtless set free from this and from that organism different endotoxins. Doubtless bacterial toxins thus originating play a more important part than do toxins from the amebas themselves, if there be amebic toxins.

In regard to the exact method of action of either toxin, we may assume the selective action of the specific toxins to determine the system or the structure involved. In this connection, the old theory of the metabolic origin of many of the complications mentioned above may present itself in a new light. The liver is to a great degree responsible for the disposal, breaking up or removal of toxins arising within the body. It is, therefore, barely possible that certain of the systemic disorders may arise from a disturbance of the normal metabolic function of the liver. As to the hemic complications, the degrees of secondary anemia noted might readily arise from a bacterial hemolytic toxin, but our observations on the active lysis of engulfed red corpuscles in numerous instances lead us to the belief that the endamebae either through an intracellular or extracellular hemolytic toxin, or both, may be even a more important factor.

In conclusion, we would impress the facts that constitutional disturbances are very frequent complications of endamebic pyorrhea, that arthritis, particularly of the type arthritis deformans, is the most frequent complicating disorder, and that the results from the local and general administration of emetin hydrochlorid in the relief of the pyorrhea and the marked improvement of the arthritic condition are very encouraging in a large percentage of cases. In addition, unexpected relations between pyorrhea and certain remote conditions are established through the response to the emetin treatment.

We are indebted to the clinical staff of the University of Wisconsin, to the dentists of Madison and to Dr. Allen J. Smith of the University of Pennsylvania for assistance in the treatment of this series of cases and for timely suggestions during this period of preliminary observation.

SODIUM CITRATE IN THE TRANSFUSION OF BLOOD*

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Blood mixed in proper proportions with a solution of sodium citrate does not clot, owing to the well-known fact that the calcium salts are no longer available for coagulation. Such blood may be kept for many days in the ice-box, without losing its oxygenating function. After one week the cells show little change under the microscope, and very slight reduction in the resistance to toxic physical or biologic agencies. After a few days there is merely some tinging of the supernatant fluid. Experimentally, I have found that guinea-pigs or dogs may be practically exsanguinated, and can then be rapidly restored by venous transfusion of citrated blood, even if the blood is several days old. No unpleasant reactions occur. Human patients have been treated in the same way, receiving in various cases amounts ranging from 10 to 350 c.c. of citrated blood. The blood was used fresh in some instances; and in others, it was from three to five days old. Such injections are perfectly well borne and produce no apparent disturbance of any kind except a transient rise of temperature and polyuria.

The method is simple. Blood is aspirated from a vein and is at once well mixed with sodium citrate in 10 per cent. solution in water, in the proportion of 1 c.c. of solution to 10 c.c. of blood. Exceptionally one encounters blood which requires slightly more or less citrate proportionately. Preliminary tests, 0.1 c.c. of the solution to 0.5 c.c., 1 c.c. and 2 c.c. of blood, respectively, being used, enable one to determine rapidly the requisite proportions in any individual instance. If the mixture is made in the syringe, in cases in which not more than 50 c.c. are to be transfused, the transfer can be made directly from donor to donee. If larger amounts are to be used, the blood is expelled into a flask, from which the injecting syringes are filled. In drawing the blood, it is convenient to use a three-way stop-cock which communicates with the needle, with a 10 c.c. syringe containing the citrate, and with a large aspirating syringe.

The same method has been used for direct transfusion in dogs. The needles are introduced into the veins of donor and donee, and are both connected by a T-shaped tube with a syringe. An accessory syringe permits of the injection of the citrate solution into the tubing between the syringe and the donor's needle. The blood is alternately aspirated and expelled, the direction of the current being controlled by two stopcocks. The apparatus is very simple, and requires the help of only one assistant.

A possible objection is based on the influence of the sodium citrate on the coagulation time of the donee. This has been tested for me in a series of cases by Dr. Beck of the General Memorial Hospital. The figures indicate that the introduction of large amounts of 20 per cent. sodium citrate solution do not lower the coagulation time in the least. In fact 5 gm. of sodium citrate reduces the coagulation time by one-half. The tests have been made on blood aspirated from the vein immediately before, and ten minutes after the injection. It gradually returns to normal.

The uses of this method require little discussion. For the frequent injection of small amounts of blood, it offers obvious advantages. For the direct transfer of large amounts, it may be compared with the method introduced by Satterlee and Hooker. It has, however, the obvious advantage that sodium citrate is always easily obtainable, which is not the case with hirudin. The fact that the blood can be kept on hand for some days may be of value in cases of threatened hemorrhage, as in gastric ulcer, or typhoid. Indeed, its effect on coagulation time indicates its use in hemorrhagic conditions. Essentially, the method is similar to the old method which relied on the use of defibrinated blood. It is, however, simpler than this, and avoids the effects attributed to the presence of fibrin ferment in the defibrinated blood. The possible disadvantages connected with its use can be determined only by prolonged observation.

In selecting the blood to be transfused, it has been customary to mix the serum and the cells of donor and donee in varying proportions, in order to avoid the dangers resulting from agglutination or hemolytic effects. I have found it quite satisfactory to use the following method for the purpose: The citrated bloods of the two individuals are mixed in narrow tubes as follows, three tests being made: One c.c. of each; 0.1 c.c. of one, to 0.9 c.c. of the other, and vice versa. After incubation for one hour, agglutination may easily be determined. Hemolysis is disclosed by the color of the upper layer, if the cells have settled sufficiently; if not centrifugation is required. This method is much less elaborate than that at present in use, but has the advantage that it preserves the natural conditions.

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REPAIR OF DEFECTS IN BLOOD VESSELS BY FREE GRAFTS OF FATTY TISSUE *

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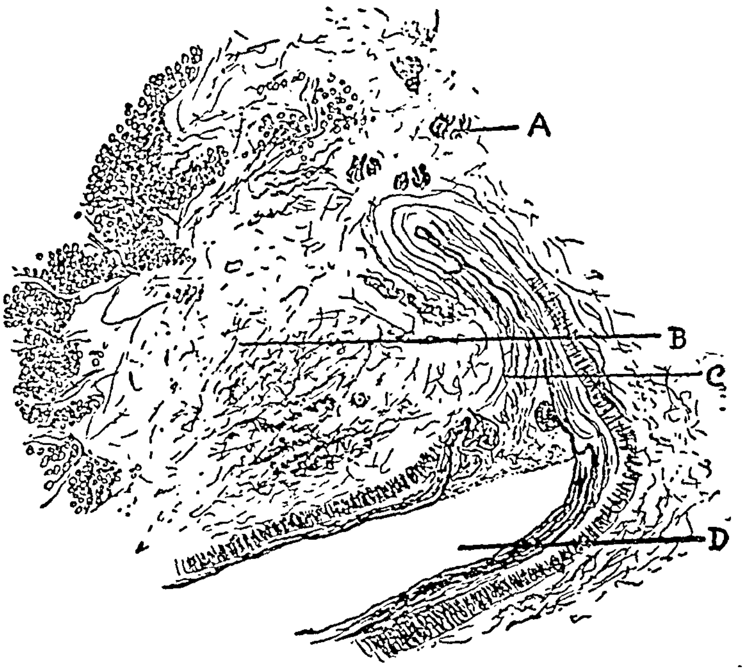
Feb. 7, 1914, while removing the glands during an operation for cancer of the penis, part of the femoral vein to which they were firmly attached had to be cut away. The patient was 78 years of age, the veins thick and sclerotic; proper material for venous suture was not at hand. Hemorrhage was temporarily stopped by pressure. A bit of fatty tissue removed from the wound in the groin was tacked over the opening in the vein by a fine silk stitch which did not pierce the vein itself, but passed through the adjacent tissue and was crossed over the graft. On releasing the pressure there was no further bleeding. The patient died twelve days afterward in a senile delirium. Necropsy showed the lumen of the vein to be free of clot and its walls smooth. The graft was firmly adherent and not necrotic in spite of the fact that the wound was suppurating and the graft surrounded by pus. Microscopic sections showed a good cell stain in the transplant, although there was much leukocytic infiltration; the lumen of the vein was free, the intima not degenerated. The site of the graft is readily seen in the drawing by the break in continuity of the elastic fibers of the vein, which have not bridged the defect.



Illustrating repair of breach in vein wall by autotransplant of fat. *A*, silk sutures; *B*, graft; *C*, defect in wall of vein filled out by graft; *D*, lumen of vein. Magnification × 10. Weigert's elastica stain.

Carrel and Guthrie[1] in their well-known experiments succeeded in patching arterial defects with various substances, using peritoneum and even rubber. Jiano[2] repeated these experiments and applied them clinically in a case of femoral hernia where the femoral vein had been accidentally wounded. A defect was caused 1 cm. wide that took in half the circumference of the vein. This was patched with a pedicled flap from the hernial sac and covered for better security with a layer of the surrounding loose connective tissue.

Hilse,[3] Binnie[4] and others have called attention to the efficacy of a free graft of fat or a pedicled omental flap in the arrest of hemorrhage from parenchymatous organs. Hilse noted that it was often unnecessary to stitch the graft to the wound surface, and that simple pressure continued for a few minutes would suffice to secure a fibrinous attachment firm enough to assure permanent hemostasis.

Kirschner[5] and later Chiasserini[6] experimented with a cuff of fascia interposed as a segment between the ends of a circularly resected artery; thrombosis, however, occurred at the suture-line. Davis[7] wrapped strips of fascia around blood-vessels to reinforce a suture and Halsted[8] suggests their use in aneurysms. Both Kirschner and Davis used pieces of fascia in suturing parenchymatous organs and call attention to the prompt hemostasis. Hohmeier[9] and König[10] used free grafts of fascia to repair defects in hollow viscera—trachea, esophagus, intestine, bladder, etc.

Conditions may occasionally arise in which closure of a rent in a vessel by suture is impracticable, whether because of sclerosis, inaccessibility, lack of a proper instrumentarium or because of the time required for this delicate work. In these cases repair by means of a small free graft of fat or fascia offers a simple substitute. For the repair of small defects in veins the graft of fat or fascia has the advantage that no suture of the vessel itself is needed, a few simple retaining stitches which hold the graft in place without piercing the vessel wall being sufficient. The procedure is consequently more simple than repair by suture, needs no specially delicate instrumentarium, and is easier, quicker and safer, there being no threads in the lumen of the vessel on which clots may form.

CONCLUSION

Free grafts of fat or fascia sewn over defects in the walls of veins offer a *simple and safe substitute* for the repair of these defects by suture.

135 Stockton Street.

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* From the Division of Surgery, Medical Department, Stanford University.

* Read at *the meeting* of the San Francisco County Medical Society, May 19, 1914.

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2. Jiano: Angioplastie peritoneale pediculee, Jour. de Chir. de Bucarest, 1913, i, 20.

3. Hilse: Experimentelle Untersuchungen über *freie* Fetttransplantation bei Blutungen parenchymatöser Organe, Arch. f. *klin.* Chir., 1914, ciii, 1042.

4. Binnie: Uses of Fat in Surgery, Surg., Gynec. and Obst., *1914*, xviii, *336*.

5. Kirschner: Gegenwärtiger Stand und nächste Aussichten *d. auto*plastischen freien Fettübertragung, Beitr. *z. klin.* Chir., *1913*, lxxxvi, 5.

6. *Chiasserini:* Plastiche vasali con lembi liberi di aponevrosi, Policlinico, sez. chir., 1913, xx, *467*.

7. Davis: Transplantation of Free Flaps of Fascia, Ann. Surg., *1911*, liv, *743*.

8. Halsted: Partial *Occlusion of* the Thoracic and Abdominal Aorta by Bands *of* Fresh Aorta and Fascia Lata, Ann. Surg., *1913, lviii*, 183.

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THE NEED FOR DETAILED SPUTUM REPORTS

SUPPLEMENTARY REPORT

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The bare statement in a laboratory report that the sputum does not contain tubercle bacilli gives the physician comparatively little help in arriving at a diagnosis, and may be absolutely misleading. It is important that he should have in addition some idea of the character of the sputum submitted by the patient. A dozen negative reports from mouth and throat specimens would be of less value to him than one report on a specimen that came from the lungs. The designation of the sputum as "mucoid" or "purulent" would be a helpful addition to the ordinary report, but a somewhat more detailed description of the macroscopic and microscopic characteristics of the specimen would be of still greater value.

In a previous communication,[1] a method of making reports was suggested, by the use of which, it was declared, the physician would be informed with some degree of certainty whether the specimen was derived from the upper air passages or was really from the lungs; in other words, he could tell whether the specimen was a "mouth" specimen or a "bronchial" specimen.

Under "macroscopic appearance" the specimen is described as watery, mucoid, mucopurulent, purulomucoid, purulent or bloody. If one of the other varieties is simply blood-streaked, the fact is noted; but the specimen is not called bloody unless it consists of pure blood.

In the microscopic examination, the presence or absence of tubercle bacilli is noted. Their number is estimated according to the Gaffky schema, and their arrangement is recorded if desired.

Under the heading "cells," particular attention is given to squamous epithelial cells and to pus cells (polynuclears). If the former are present in large numbers so that they are prominent elements in the picture, they are given precedence in the statement of cells present. On the other hand, if the pus cells are numerous they are recorded first. The presence of small round cells, alveolar cells, and, in appropriately stained specimens, of eosinophils, may also be mentioned. Mononuclear cells rarely form the majority of the elements present.

In regard to secondary organisms, a note is first made stating whether they are few or many. More details as to the varieties present may then be added.

A table of 541 examinations showed that there was a natural grouping of the specimens into four main classes. Since the publication of the article referred to, the number of cases in which the method has been applied, at the Adirondack Cottage Sanatorium and at Nopeming Sanatorium, has increased to 2,509, as shown in the accompanying table. (The summaries were made by Dr. George D. Heist and Samuel Marcus.)

The examinations were made by seven or eight different men, yet the results are substantially the same as in the first report. A mucopurulent sputum, containing many pus cells and few secondary organisms, is in most cases a "bronchial" specimen, and if it does not contain tubercle bacilli, the doctor may be satisfied that the test was a fair one. If the specimen has been coughed up from the lungs, it is not usually much contaminated by mouth or throat secretions. On the other hand, a specimen may to the naked eye be almost equally purulent; but if under the microscope it contains many squamous epithelial cells and numerous secondary organisms, it is more likely to be derived from the throat or nose ("throat" specimen). In catarrhal conditions of the nose and throat such specimens, thick and yellow in appearance, are frequently obtained. Watery and mucoid specimens, like the droplets emitted in ordinary coughing, in which sputum is not raised from the lungs, do not usually contain tubercle bacilli, and the acceptance of reports on such specimens as a basis for excluding a diagnosis of tuberculosis is an injustice to the patient.

TABLE SHOWING CHARACTER OF SPECIMENS OF SPUTUM IN A SERIES OF TWENTY-FIVE HUNDRED AND NINE CASES*

Type	Macroscopic Appearance	Cells Predominating	Secondary Organisms	T.B. +	T.B. —	Total	Per Cent. +	Per Cent. —
1	Watery or mucoid	Squamous epithelial cells	Many	19	388	407	4.7	95.3
2	Purulomucoid	Squamous epithelial cells	Many	48	421	469	10.2	89.8
3	Purulomucoid	Pus cells.......	Few	215	290	505	42.6	57.4
4	Mucopurulent	Pus cells.......	Few	452	223	675	68.4	31.6
5	....	Other combinations	......	130	323	453	28.7	71.3
	Totals......	....	......	864	1,645	2,509	34.4	65.6

* The headings "T. B. +," "T. B. —," "Per cent. +," Per cent. —" indicate, respectively, the presence and absence of tubercle bacilli. Types 1 and *2* are "mouth" or "throat" types; types 3 and 4, "bronchial" types.

STRANGULATED EPIGASTRIC HERNIA

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A man, aged 80, for a number of years had had a mass in the median line above the umbilicus. This mass, which evidently was an epigastric hernia, had suddenly shown evidences of strangulation, and it was in consequence of this that he was seen. The strangulation presumably had followed a bronchitis which had occasioned severe coughing. Operation was performed at once. The hernia was found to escape through an opening in the linea alba about 3 inches above the umbilicus. There was a distinct peritoneal sac, which, on being opened, disclosed a mass of omentum about the size of a small orange. This was ligated off and the hernial opening closed. The patient made a good recovery so far as the wound was concerned, although the bronchitis was considerably aggravated by the anesthetic, and in consequence of this he was quite ill for a number of days.

Epigastric hernia is, in comparison with the total number of hernias, infrequent, and strangulation of an epigastric hernia is particularly so. The percentage of the occurrence of epigastric hernia has been variously given as from 1 to 5 per cent. of all hernias.

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[1] Laird, Arthur T.: A Method for Increasing the Diagnostic Value of Sputum Reports, The Journal A. M. A., Jan. 23, 1909, p. 294.

Bull and Coley,[1] in a report of 1,500 cases of hernia, give only two cases of this type, and a later report by the same observers of 2,032 operations for hernia notes only six cases of epigastric hernia. John Phillips[2] reported only forty-two out of 7,500, a percentage of 0.56. Quain,[3] on the other hand, gives the percentage of 5 per cent.

Quain divides epigastric hernia anatomically into two classes: First, simple fat tumors or properitoneal lipomas, which protrude through a cleft in the linea alba and do not possess a proper peritoneal sac; and second, true hernias with a sac of peritoneum, in which sac hernial contents may or may not be found.

The invariable appearance of these hernias above the umbilicus and never below it is due to the anatomic relations of the recti muscles, which, below the umbilicus, come closely together, while above that point an appreciable interval exists between their sheaths, which is occupied by areolar tissue. The production of hernia of this type is therefore much easier in the upper abdomen than in the lower.

Strangulation in this type of hernia is rare. Hotchkiss,[4] writing in 1911 and reporting a case of strangulated epigastric hernia, was able to find but two previously reported cases. A search of the literature, however, shows a considerably greater number. Moschcowitz[5] of New York reports a case of strangulated epigastric hernia, and after carefully considering all the reported cases of strangulation comes to the conclusion that only ten of them can be regarded as true cases of epigastric hernia. He believes that most of the reported cases of this type of hernia are not true hernias at all, but merely cases of prolapse of the fat contained between the layers of the falciform ligament of the liver.

As the case I describe escaped through an opening in the linea alba and possessed a true peritoneal sac, and as the contents of the sac was composed of omentum and not merely properitoneal fat, I believe it should be considered as a true case of hernia.

The recognition of such a hernia is quite simple if the mass be of any size. The smaller ones might be overlooked if the examination were not a careful one. The subjective symptoms of such a lesion are dull, dragging pain in the epigastrium, increased by bending backward or kneeling, sometimes nausea or vomiting or flatulency.

Phillips[2] quotes from another writer a method of distinguishing a true hernia from a fatty mass, namely, the placing of the hand over the mass and causing the patient to cough, when, if a true hernia be present, the observer will get an impression as though water were being squirted against the hand. This writer finds that the most common site is 1½ or 2 inches above the umbilicus.

The operative treatment is as a rule very simple. The contents of the sac are returned to the abdomen, if it be bowel, and in good condition, or ligated off and removed, if it consist of omentum. The sac is closed and the split in the fascia repaired. Coley recommends the Mayo technic as used for umbilical hernia.

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[1] Bull, W. T., and Coley, W. B.: Results of 1,500 Operations for the Radical Cure of Hernia in Children, Between 1891 and 1904, Med. Rec., New York, March 18, 1905, p. 401.

[2] Phillips, John: Epigastric Hernia, Its Importance in the Diagnosis of Obscure Abdominal Conditions, Cleveland Med. Jour., February, 1913, p. 102.

[3] Quain, E. P.: Epigastric Hernia, Jour. Minn. Med. Assn., July 15, 1910.

[4] Hotchkiss, L. W.: Epigastric Hernia, Ann. Surg., 1911, liv, 78.

[5] Moschcowitz, A. V.: Surg., Gynec. and Obst., 1914, xix, 520.

PROGRESSIVE LENTICULAR DEGENERATION

REPORT OF A CASE WITH NECROPSY

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Because of the great interest that is now being manifested in the functions of the lenticular nucleus and the symptoms produced by disease of this structure, I have deemed it important to record the following case of progressive lenticular degeneration. Although a few clinical cases of this condition have been described,[1] so far as I am aware the present report is the first recorded in American literature in which the diagnosis of "progressive lenticular degeneration" was confirmed by necropsy.

History.—E. B., woman, aged 19, was admitted to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases in July, 1912, in the service of Dr. Charles W. Burr. Her parents and close relatives were healthy. Her parents stated that she had always been a somewhat nervous child, but had never been really ill. They declared that she was bright and intelligent, and appeared to be robust, but that occasionally she had been subject to attacks of mild mental depression which lasted a few weeks at a time. The family, however, did not attach any importance to these attacks. In January, 1911, while seemingly in apparent health, she received a slight injury of the right hand. Immediately following this her nervousness increased, and after a few weeks she became forgetful, depressed, dull and indifferent. At this time her speech also became indistinct. This condition, it was stated, progressed slowly.

Physical Examination.—On admission, the patient appeared to be a thin young woman, inclined to listlessness and lethargy. She was uncommunicative, and would not answer questions readily. She appeared to comprehend what was said to her, but after being aroused was childish and silly in her attitude. The pupils were equal in size and reacted normally to light convergence and accommodation. There was no nystagmus, and the ophthalmoscopic examination revealed nothing abnormal. The extra-ocular muscles acted in a normal manner. The muscles innervated by the cranial nerves were not paralyzed, but there was some twitching of the facial muscles. This was more marked on the left side than on the right. The mouth was held partially open, and the tongue, the pharynx and the larynx were normal. At times there was some difficulty in swallowing liquids. Dysarthria was fairly well marked. Hearing was normal. All four extremities were spastic, but were not paralyzed. Muscular power for all movements was good. Intention tremor was well marked in the right upper extremity, but only slightly so in the left. The tremor was of the regular type—to-and-fro movements—sometimes disappearing when the limb was at rest, but becoming quite marked on the right side when any voluntary movement was attempted. There was no ataxia, but the spasticity rendered all the movements awkward and difficult. The condition of the lower extremities was similar to that of the upper extremities, but the tremor was less marked in the former and the spasticity was much greater. There was a tendency to tonic contraction of the legs on the thighs, and also of the adductor muscles, but the legs could, nevertheless, be extended. The tendon reflexes of both the upper and the lower extremities were active and almost normal. The Babinski reflex could not be elicited, and ankle clonus was also absent. The organs of the thorax and abdomen seemed to be normal.

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[1] Auer: Nerv. and Ment. Dis., July, 1914. Cadwalader, W. B.: Progressive Lenticular Degeneration, The Journal A. M. A., Oct. 17, 1914, p. 1380.

There was no evidence of disease of the liver, and the abdominal reflexes were active and equal in intensity. Sensation everywhere was unimpaired. Both the urinary analysis and the blood examination were negative. The Wassermann reaction with blood-serum was weakly positive.

From this time on the patient appeared to be growing progressively worse. The Wassermann test was made at various intervals, but except for the slightly positive response elicited at the first examination it was always negative. The speech became more and more indistinct, and the difficulty in swallowing increased. All four extremities gradually became more and more spastic, and the tremor became less pronounced. Extension of the arms, although possible, was accomplished only with difficulty; the legs, however, could not be fully extended at the knees because of contraction. The right leg was constantly held flexed on the thigh, and the thigh flexed on the abdomen. While the patient lay on her left side the right leg was thrown over the left, which was similarly contracted; tremors still persisted in the upper extremities, and there was a lateral tremor of the head. The right elbow was flexed at right angles and the fingers were flexed on the palm of the hand, the degree of flexion varying from time to time. The muscular power, however, did not appear to be greatly diminished and the biceps and triceps reflexes were slightly exaggerated. Thirteen months after the onset, and without any essential change in the condition, the patient died.

NOTES OF THE NECROPSY

Macroscopic Examination.—The macroscopic appearance of the brain and cord was normal. On making a horizontal section through the brain at the level of the base of the ganglia no evidence of softening of the lenticular nucleus could be detected with the naked eye.

Microscopic Examination.—Sections were stained by the hemalum-fuchsin method, and with the van Gieson and Nissl stains. Sections taken at different levels of the spinal cord, when stained by the hemalum-fuchsin method, showed no characteristic lesions, but some of the cells of the anterior horns did appear to stain a darker color than normal, thus suggesting pigmentation. The cells were well formed and the nuclei had not disappeared. When stained by the Weigert method, the white columns did not show any degeneration. There was no round-cell infiltration of the meninges, the blood-vessels were not thickened, and the perivascular spaces, although large, did not contain round cells or granular débris. No evidence of syphilitic infection could be found. Sections made through the medulla oblongata, pons and peduncles revealed similar conditions. No positive evidence of disease was discovered, but the nuclei of the cranial nerves and the cells of the substantia nigra did show occasional evidences of increased pigmentation. Sections of the cortex showed nothing abnormal. The membranes were not infiltrated with round cells, and the nerve-cells and blood-vessels appeared to be normal. Serial sections were made through the basal ganglia of both sides. When examined under the low-power microscope a number of small, irregularly scattered areas of softening were readily detected in the lenticular nuclei of each side. These areas of softening varied considerably in size, the largest being about the size of the head of a pin, whereas numerous points of beginning softening appeared to be much smaller. On the whole, these areas of softening were more numerous in the putamen than in the globus pallidus. In the middle of one of the larger softened areas, as a rule a small artery stood out prominently. Its walls were not thickened, and there was no perivascular infiltration, although the perivascular space was dilated. The surrounding tissue appeared to be contracted, and there was a considerable space between it and the blood-vessel, which contained a few compound granular cells and a quantity of débris. The tissue in the region of the softened area showed marked increase in the neuroglia cells, and when stained with hemalum-fuchsin, appeared to be firmer and denser than normal. The large nerve-cells of the putamen seemed to be less numerous than in the normal condition. The internal capsules, the optic thalamus and the external capsule revealed nothing abnormal. When stained with the Weigert stain, strands of fibers here and there did not take the blue color as readily as they should normally, but positive evidence of degeneration was lacking. No essential difference in the pathologic changes on the two sides was found. The thoracic and abdominal organs were not examined microscopically. The liver did show evidences of cirrhosis, but, unfortunately, a specimen could not be secured for careful study.

During the lifetime of the patient no unqualified diagnosis had been made. Syphilis had been suspected because of the fact that the first Wassermann reaction had been slightly positive. All subsequent examinations, however, had proved to be negative. Lenticular disease had not been suspected until the case came to necropsy, when the clinical picture was immediately revealed. Unfortunately, but little information as to the earliest symptoms that developed could be obtained, but it is probable that the statement of the parents that the patient was subject to frequently recurring attacks of mental depression was of some significance. When the patient was first admitted to the hospital her mentality was distinctly impaired. She was listless, lethargic, and at times emotional. Her memory and, in fact, all the mental processes were impaired so much that at one time the development of dementia praecox had been suggested. From the very beginning there was a distinct tendency to spasticity of all the extremities and of the face, but the well-marked tremor, limited at first almost solely to the right upper limb and to the muscles of the face, very gradually affected the entire musculature, although it never became very noticeable except on voluntary movement. It is probable that the intense spasticity, which began early and seemed to develop more rapidly than the tremor, must have masked or prevented the occurrence of the latter, which might otherwise have been most pronounced. The position assumed by the patient when lying in bed was almost identical with that shown in the photograph of Homan's patient, given in Wilson's article in *Brain,* 1912, page 316. The onset was not unlike that described by Wilson as acute, in that the symptoms developed rapidly; there was nothing, however, to indicate the presence of a toxemic condition; that is, there were no fever, malaise, etc. The patient did not come under observation during this early period, so that nothing definite regarding the onset can be stated. The fact that one Wassermann examination was reported as positive seems of little significance when it is remembered that eight subsequent tests were all negative, and that there was no clinical evidence of syphilis, or any microscopic evidence of lues in the brain, findings that would seem to preclude the possibility of the existence of syphilis.

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Community Nursing.—Dayton, Ohio, has revised its method of public nursing. Instead of having tuberculosis nurses, board of health nurses and special visiting nurses, under the new arrangement each nurse will care for all classes of cases in her district. Under this plan information concerning cases will be more easily transferred and the nurse will become better known in her district and can give more efficient service on account of a better knowledge of families as a unit. Close cooperation with the health department is provided for by each nurse being sworn in as a sanitary inspector with authority to order correction of insanitary conditions. All nurses, whether from municipal or private agencies, are under a single supervision.

SYPHILITIC ULCER OF THE STOMACH

REPORT OF A CASE EXAMINED HISTOLOGICALLY

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In view of the fact that the impression prevails in some quarters that syphilitic ulcer of the stomach is a rather rare condition, and since, in spite of the assertions of others, that it is fairly common, comparatively few cases are reported in the literature, the following case would seem to be of some scientific interest:

A negro laborer, aged 50, complained of pain in the stomach after eating. The family history was negative, except that the wife had had one late miscarriage. The personal history was negative for any trouble bearing on the present illness. There had been no stomach trouble before the onset of the present illness. The patient denied lues but admitted gonorrhea.

The present illness began three months before admission with a sharp pain in the upper epigastrium, radiating to the right side, appearing from one-half to one hour after meals, being fairly constant in appearance, but varying in intensity. It was never severe enough to become a definite colic. Acids appeared to increase the pain. The patient thought that he had lost some weight, the amount of which was not known, but probably about 20 pounds.

Physical examination revealed nothing abnormal except tenderness on pressure over the epigastrium, especially just to the right of the midline. Examination of the blood showed a slight anemia (4,300,000 reds; hemoglobin 65), but nothing else of interest. The Noguchi test for syphilis was positive.

Stomach analysis after an Ewald meal showed an absence of free hydrochloric acid, a total acidity of 25, occult blood and lactic acid and Oppler-Boas bacilli. Microscopic examination of the empty stomach contents, removed by means of a Jutte duodenal tube, revealed nothing abnormal. The tube passed through the pylorus with some little difficulty (1 hour), but as soon as it had become engaged in the pylorus, an interesting change in the microscopic appearance of the contents was noted. Numerous pus cells, with a mixture of red blood cells were noted, along with a large number of cylindrical and globular gastric epithelial cells, giving a very different picture under the microscope from that obtained in the first stomach contents removed. The duodenal contents were normal cytologically and chemically.

The patient was placed in bed, and on specific treatment (mercury and potassium iodid), for two weeks. At the end of this time, there was no demonstrable improvement in his condition. The pain was as bad as before. He was afraid to eat on account of the discomfort. At this time it was noted that the administration of hydrochloric acid after meals seemed to increase the pain.

In view of the absence of any improvement in the gastric or general condition of the patient after two weeks of antiluetic treatment, it was deemed advisable to perform an exploratory laparotomy on the suspicion of the presence of a malignant condition. At operation, a marked annular thickening was made out, encircling the first part of the pyloric region. There was a general enlargement of the pyloric lymph-nodes. Also, several large mesenteric lymph-nodes were observed. Several of the pyloric nodes were as large as Lima beans. A resection of the pylorus was done. The specimen removed at operation showed an annular, apparently active ulcer, almost completely encircling the first part of the pylorus. The submucosa appeared to be most involved. The edges of the ulcer were undermined and soft. The floor was smooth. At one extreme end there appeared to be an attempt at healing. Microscopically, the picture was one of degeneration, chiefly of the submucosa, but affecting also the muscular layers to some extent, with a marked periarteritis of all the arterioles. The mononuclear elements played almost the entire part in the periarteritis. At the point where the attempt at healing was suspected, there was an evident growth of new connective tissue. The large lymph-nodes showed a simple hyperplasia.

The patient made a good recovery from the operation, received a dose of salvarsan and a thorough mercurial treatment, and was as well as ever when last heard from, about eight months after the operation. The histologic specimens were submitted to several competent pathologists and all agreed that the picture was that of a syphilitic periarteritis. No spirochetes could be demonstrated in the sections.

In a search of the literature, I was able to find only one case reported which resembled the foregoing in all respects, even to the resection of the stomach and to the histologic appearance of the lesions. This was reported by Hayem[1] in a man of 60, on whom a resection was done on the suspicion of malignancy, which condition was suggested by the stomach analyses, as it was by the stomach analyses reported above.

It will perhaps be well to state that since this case, I have been very suspicious of all ulcer cases which have fallen into my hands, and although I have seen two since then in which there were positive Wassermann reactions, I have seen no benefit to either from the administration of mercury and potassium iodid, and, in one case, of salvarsan.

I wish to thank Dr. R. W. Knox, chief surgeon of the Southern Pacific Lines, on whose service the case was observed, for permission to publish this report, and also Dr. Martha A. Wood, who prepared the histologic specimens.

BREAKAGE AND REMOVAL OF EUSTACHIAN APPLICATOR

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Recognizing the truth of the statement that it is by our mistakes as well as by our successes that we profit, I wish to submit the following short report of an unexpected and unforeseen accident that occurred to me a short time ago

A woman, aged 20 (a private patient), refined and of a highly nervous temperament, complained of fulness, tinnitus and some impairment of hearing, etc., in her left ear. The diagnosis was tubotympanic catarrh. In order to shrink the mucous membrane of the eustachian tube so that I could get a blast of air freely into the middle ear or pass a eustachian bougie, a Yankauer's eustachian applicator tipped with cotton soaked in a mixture of cocain and epinephrin was passed well into the tube. When this was removed it was discovered that the distal end had broken off, consisting of the cotton tip and an inch of the twisted wire applicator.

Thinking, or rather hoping, that it might have dropped into the pharynx, I made an attempt to pass a gentle blast of air through the tube. No sound could be heard, however, through the ausculting tube, the occlusion being apparently complete. In the hope that the end might be protruding enough from the mouth of the tube to permit its being grasped with forceps and removed, I carefully inspected the eustachian opening with the aid of the Holmes nasopharyngoscope, but there was no sign of the applicator. It then occurred to me to pass another dry cotton-tipped applicator, twirl it around with my thumb and forefinger and withdraw it. This was done and at the first trial, to my gratification, the dry cotton engaged the broken end of the wire and together with its cotton tip it was withdrawn through the catheter.

During the short interval required the patient was blissfully unconscious of what had occurred (which was particularly pleasing on account of her temperament), and only when she inadvertently caught sight of the dangling end did she unconcernedly remark, "Oh, did the cotton come off?"

While I had used Yankauer's eustachian applicators hundreds of times I had never had the slightest trouble in any way, and when I sought for a reason I found that before the sterilization of the applicator (which had been used *once* or twice before) by boiling, the cotton had been burned off, and this had taken the temper out of the wire and made it brittle, although it had withstood the pull that I always make to test whether or not the cotton is perfectly and securely applied. Of course, this should never be done; the cotton should be removed by laying the applicator flat on a glass-top table and scraping it off with a knife or some semisharp instrument.

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[1] Hayem: Maladies de l'estomac.

In a conversation a few days ago, Dr. Yankauer told me that I was the second who had recited to him an occurrence of this sort. I hope that if this accident, which might readily prove most embarrassing, should befall another, he may find in the foregoing report some helpful suggestions and profit.

PROSTATIC ABSCESS OPENED THROUGH THE CYSTO-URETHROSCOPE WITH THE HIGH-FREQUENCY SPARK

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Abscess of the prostate is one of the less frequent complications of gonorrheal invasion of the posterior urethra. In fully 75 per cent. of the cases, the abscess points toward the urethra, usually causing complete retention of urine and requiring regular catheterization until such time as spontaneous rupture into the urethra occurs. This is usually from seven to ten days after the onset of retention, but I have seen cases that have gone as long as three weeks before being relieved by the abscess discharging into the urethra. Operative interference is rarely justified in these cases, for incision of the abscess either through the perineum or through the urethra by perineal incision is a comparatively radical procedure when it is remembered that it is the rule for such abscesses to rupture into the urethra if given time. The simpler procedure, of draining through the rectum, save perhaps in cases about to rupture into that organ, is bad surgical practice for obvious reasons.

I have recently opened a prostatic abscess by means of high-frequency cauterization through the Buerger cysto-urethroscope, and the procedure was so simple and caused the patient so little discomfort that I believe the report may be of interest:

E. L., negro, aged 26, applied at the Touro outclinic for relief because he had been unable to urinate for the past two days. There had been gonorrhea of four weeks' duration. The bladder contained 16 ounces of slightly cloudy urine. Patient returned next day still suffering from retention. Sixteen ounces of urine were again withdrawn. Through the cysto-urethroscope, the posterior urethra was inspected. The mucosa was found to be much injected. Just behind and slightly to the right of the colliculus, distinct bulging could be seen. The flexible electrode was pushed against this bulging area and a rather mild current applied. In thirty seconds there was seen through the instrument a puff, resembling exactly a powder explosion, the field of the instrument rapidly clouded, and I knew that I had opened the abscess. The patient experienced no pain at any stage of the proceedings, which did not last more than five minutes in all. He has been emptying the bladder without difficulty since.

305 Baronne Street.

The Physician's Life.—The study of medicine is an entrancing subject; its practice require an array of virtues whose mere contemplation staggers the mind. One must meet violence with gentleness, ingratitude with equanimity, insult with fortitude, slander with silence. The physician's life is a daily exemplification of the golden rule. The very sensitiveness that inspires sympathy with pain and misery is a weapon in the hands of ignorance and malice wherewith they deal dreadful wounds, wounds which must be endured silently. Resentment can have no place in the physician's mind. Equanimity must be maintained in the face of misapprehension and abuse.—Gadsden (Ala.) *Times-News*.

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 341)

IV

A. STIMULANTS: 2. MEDULLARY—ATROPIN GROUP—(Continued)

LOBELIA

The action of lobelia is practically that of its alkaloid, lobelin, which resembles nicotin closely in its preparation and actions.

Tobacco was used formerly in a great variety of conditions, but owing to its careless use and the great toxicity of its alkaloid, many accidents resulted, and it fell into disuse in therapeutics. If the drug which has been studied more frequently should now be considered of little value, it is difficult to explain the advantages to be derived from lobelia. Lobelia itself is no longer used as an emetic as it was formerly. It would seem that physicians are loath to give up a drug which has been so long in use.

Those who wish a detailed description of lobelia, or lobelin, are referred to the larger text-books of pharmacology, for its actions are very complex. The peripheral actions of lobelin, like those of nicotin, may be summarized as consisting of stimulation of the ganglia of the sympathetic and parasympathetic systems throughout the body after small doses, followed by depression or paralysis of these ganglia with large doses. It will thus be seen that lobelin acts on the organs innervated by the sympathetic and parasympathetic systems in opposite directions, depending on the dose, and the complex nature of its effects may be appreciated when one remembers that the actions of these two sets of nerves are commonly antagonistic.

Stimulation and depression of the ganglia induce the same effect on the organ supplied as stimulation and depression of the nerve endings; hence lobelin combines in itself the peripheral actions of a number of drugs including atropin, pilocarpin, epinephrin and others. In addition to these actions it stimulates and later depresses various parts of the central nervous system.

The emetic action, for which lobelia was formerly used, points toward the medullary centers as the seat of this stimulation, and it also stimulates the vagus, vasomotor and respiratory centers.

The action on the vagus ganglia results in cardiac slowing, which is augmented by the stimulation of the vagus center, but this is soon followed by an increased heart-rate due to the depression of the ganglia. The rise of blood-pressure of peripheral origin is also augmented by the central actions.

Lobelia is not used for these effects, and it is now sought to avoid more than slight stimulation of the vomiting center, because dangerous collapse is frequent with large doses.

The treatment of poisoning is symptomatic, severe poisoning with lobelia being rare since its use as an emetic has been abandoned.

Nicotin is excreted by the kidneys in part, and the same is probably true of lobelin.

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* This is the fourth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

THERAPEUTIC USES

The principal therapeutic use of lobelia is in asthma, in which it is sought to utilize the paralysis of the vagus in the bronchi. It is not apparent that it has any decided advantages over the mydriatic alkaloids for this purpose, especially as the action of atropin has been found to be more lasting. Lobelia is sometimes used as an expectorant, in which case the nauseant stage should not be exceeded. So-called cardiac asthma, or the presence of severe cardiac disease complicating spasmodic asthma, is a contra-indication for lobelia.

DOSAGE

The herb is seldom employed as such, the tincture being used in doses of 0.5 to 1.5 c.c. (10 to 20 minims).

CAMPHOR

We are unable to offer a rational basis for all the therapeutic uses to which camphor is put, its exact mode of action being unknown, but it is often used as a stimulant of the vasomotor centers, partly as a result of clinical experience and partly on the basis of the results of experiments on animals.

The effects of very large doses of camphor resemble those of picrotoxin so far as the stimulant actions on the medulla are concerned, but there is an essential difference in that even moderate doses of the drugs of the picrotoxin group tend to cause depression after the stimulation has passed, whereas with camphor, depression becomes of importance only after extremely large amounts.

The convulsions which are seen after massive doses of camphor are administered to animals (cats or dogs) are usually attributed to the action on the medulla, but it is probable that other parts of the central nervous system are also concerned in this action, especially in young animals. The convulsions are epileptiform in character.

Moderate doses of camphor stimulate the respiratory center, and while doses comparable to those used in therapeutics have little influence on the respiratory and vasomotor centers, in normal animals, it is quite possible that those centers may be influenced more easily by camphor, as in other drugs, when they have been previously depressed. It will be recalled that doses of strychnin less than those causing marked hyperexcitability have little influence on the normal blood-pressure, and that even convulsive doses cause only a brief, though high, rise of pressure in the normal animal.

Clinical experience seems to show that camphor is sometimes useful in improving the respiration and circulation when collapse is impending, and that it also acts beneficially on the heart, but there are many diametrically opposed observations recorded concerning its clinical value.

Camphor is widely used in Europe for its circulatory actions, especially in threatened cardiac failure, but on the other hand, certain English observers have recently reported that they were unable to detect any constant influence on the circulation after the subcutaneous injection of much larger doses than those commonly used.

It seems probable that camphor may cause some change in the distribution of the blood by constriction of the vessels in one area and simultaneous dilatation of those in another, without increasing the pressure.

It is quite possible that much of the diversity of opinion arises from differences in the methods of employing the drug, both as to the selection of cases in which it is to be used and in the mode of administration.

Camphor resembles the drugs of the picrotoxin group further in that it is absorbed somewhat irregularly, or at least, the actions are elicited to a variable degree after the administration of a given dose, and this probably depends on differences in the ratio of absorption and excretion, as mentioned in the introduction.

It has been observed in laboratory experiments that the results were somewhat more nearly uniform after the oral administration of camphor dissolved in olive oil than when it was given subcutaneously, but the two modes of administration gave only slightly different results. It is probable that the effects may be elicited most rapidly by means of the intraperitonal injection of camphor dissolved in ether, but there are mechanical difficulties involved in the injection, because of the extreme volatility of ether. The method is not recommended.

THERAPEUTIC USES

Camphor is used like other respiratory stimulants, and in collapse for its action on the respiration and circulation, and, as stated, in impending cardiac collapse. It has long been popular in combination with other drugs to promote sweating, and enjoys a certain degree of popularity in the treatment of "colds." It is not commonly used now in this way by physicians.

Other uses of camphor will be discussed in connection with aromatic stimulants and the external applications.

DOSAGE

Camphor is frequently administered internally in doses of from 0.1 to 0.3 gm. (2 to 5 grains) preferably in the form of capsules, cachets, mixtures or solutions. Camphor water, a comparatively weak solution, is given in doses of 15 c.c. (4 fluidrams). Spirit of camphor, a 10 per cent. alcoholic solution, which is the most frequently used preparation of camphor, can be given on sugar, cracked ice or mixed with cold water in doses of from 0.5 to 1.5 c.c. (7 to 20 minims). The liniment of camphor, which as its
name indicates is primarily intended for exte
though it is double the strength of the forego
be given in approximately the same dose. It
directed in the form of an emulsion. It is fr
used for hypodermic administration. A mor
preparation for the latter purpose can be
directing the use of oil of sweet almond or
in place of the cotton-seed oil used in the
preparation.

A. STIMULANTS: 3. CEREBRAL—CAFFEI THEOBROMIN

Caffein and theobromin belong to a group
stances which are commonly known as the
from the fact that they contain a nucleus whic
Fischer synthesized and called purin. Xa
dioxypurin, and theobromin and caffein are di
xanthin and trimethylxanthin, respectively.
dimethylxanthin, theophyllin, occurs in the lea
tea; it has been prepared synthetically and
theocin.

Comment has often been made on the extrao
extent to which plants which contain caffein a
among nearly all civilized peoples and even
savages, which is all the more remarkable in

the fact that there is nothing in the taste of these plants which serves to direct attention to them. It is well known that savage tribes are constantly on the alert for new poisons, and when a caffein-bearing plant is tested the psychic effects of caffein on any one who has not used it previously could hardly fail to attract attention, and lead to the further use of the plant.

Caffein does not increase the functions of the normal brain under the best conditions for mental work, that is, after sound and refreshing sleep and sufficient rest with freedom from worry, but when small doses are used after severe physical or mental effort it causes fatigue to disappear, and the perception of sensory stimuli and the association of ideas are promoted.

A good illustration of the inability of caffein, or other drug, to improve the best of normal conditions is afforded by the experience of athletes who find that caffein tends to lessen, rather than increase, their performances.

Large doses of caffein interfere with the proper association of ideas; for example, students are unable to study so effectively after large doses as without them. With very large amounts there is actual confusion of thought with ringing in the ears, flashes of light and other signs of mental disturbance. There is also restlessness due to stimulation of the motor areas, and to heightened reflexes in the brain and cord, and with excessive doses there are convulsions similar to those seen in fatal poisoning with strychnin, and death follows from respiratory or cardiac failure.

Caffein stimulates the medullary centers, causing increased respiration and rise of blood-pressure, due to stimulation of the vasomotor centers, but this is complicated by cardiac and vascular effects, and slowing of the heart from stimulation of the vagus center, which is also complicated by the direct, and indirect, cardiac actions. Obviously, the effects on the circulation are complex and variable.

Wakefulness is one of the most frequently observed effects of caffein in those who are unaccustomed to its use, especially when it is taken shortly before bedtime, but it may promote sleep when this is prevented by fatigue.

Caffein relieves certain forms of neuralgia, the etiology of which, and the mechanism of relief are obscure. It appears to enhance the antineuralgic actions of antipyretic drugs, such as antipyrin, with which it is sometimes administered.

Theobromin induces much less psychic stimulation than caffein, but it is convenient to consider them together because of the general similarity in most of their other actions.

The effect of caffein on cardiac muscle is important, but the muscular action is observed more conveniently on skeletal muscle. Extremely small amounts of caffein, such as are utilized when solutions of 1:100,000 or weaker are employed in laboratory experiments, increase the force, efficiency and rapidity of contraction of voluntary muscle, but with greater concentrations the muscle contracts less efficiently, less forcibly and more slowly, and finally goes into rigor.

Nearly all doses of caffein that produce any perceptible effect on the heart increase the rate, without increasing the force, and this effect with the stimulation of the vasomotor center results in at least a temporary rise of pressure, unless it is prevented by the antagonistic dilator action on the vessels themselves. Occasionally the force of the heart-beat is increased without any notable influence on the rate. The continued use of tea or coffee in large amounts gives rise to intermissions, extrasystoles or other forms of cardiac irregularity, which usually disappear when the beverage is discontinued or taken in greater moderation; but it is not certain that these cardiac irregularities are due exclusively to the caffein present in the tea and coffee, for indigestion may play a part in the symptoms.

German clinicians employ caffein in cardiac disease much as they use digitalis, but while these two drugs have a certain degree of synergistic action, the total effect is quite different.

The effects of caffein on the circulation are of importance with reference to its diuretic action. The vasoconstriction which at first affects the vessels of the splanchnic region, causing a rise of blood-pressure, also constricts the renal vessels, so that the secretion of urine may actually show a temporary diminution; but this renal vasoconstriction soon gives place to dilatation while the pressure in the general circulation remains high, thus securing the best circulatory conditions for diuresis. There are many persons in whom caffein and theobromin do not induce active diuresis.

Caffein and theobromin are absorbed fairly readily from the gastro-intestinal tract. Theobromin is relatively insoluble, but there is vastly more fluid in the gastro-intestinal tract than is required to dissolve the largest therapeutic dose. When it is desired to inject these drugs subcutaneously it is necessary to use them in connection with an alkaline salt such as sodium salicylate or sodium benzoate, to produce soluble preparations.

Caffein is probably broken down in the organism to dimethylxanthin before it acts on the kidney, and it and theobromin are excreted partly as dimethylxanthin, and partly as uric acid, but they do not cause any important increase in the output of uric acid under ordinary conditions. A small amount of unchanged caffein may appear in the urine after the administration of very large doses.

It is a matter of common experience that a certain degree of habituation on the part of the central nervous system occurs toward caffein on continued use, but the heart becomes more susceptible if large amounts are taken daily.

Very few fatal cases of poisoning by caffein have been recorded, and in view of the enormous use of the beverages containing it we must suppose that it is not a dangerous drug so far as the immediate peril to life is concerned; but minor toxic symptoms, including nervousness, cardiac irregularities, sleeplessness, lassitude, ill humor and headache are common; these usually call for no other treatment than the discontinuance of the beverage which is causing the trouble.

THERAPEUTIC USES

Caffein is used therapeutically for its diuretic action, especially in dropsical conditions and in nephritis, and also in cardiac disease. Aside from its diuretic action it is not easy to suggest a logical basis for its use in cardiac disease.

Caffein is one of the best of respiratory stimulants, because the stimulation has little tendency to pass into depression even with large doses.

The antagonistic action of caffein to that of morphin and other narcotics is strikingly illustrated in a well-known laboratory experiment. If a cat or dog be given alcohol until completely anesthetized, and caffein be then injected subcutaneously, the animal will speedily regain consciousness and make coordinated voluntary movements, often rising to its feet, or at least, to a sitting position. If anesthetized with ether previous to the administration of the caffein, it may regain consciousness and not pass under the anesthetic again, as it does after alcohol, owing to the slowness with which the alcohol is eliminated.

Caffein has an equally important, though not so striking, effect in animals under the influence of morphin, and on theoretical grounds, it is difficult to explain why caffein should not be given the preference to atropin as a respiratory stimulant in the treatment of poisoning by morphin and other narcotics.

Caffein in the form of tea or coffee is often useful for the relief of headache due to overexertion and nervousness.

DOSAGE

Caffein and theobromin or the several combinations of these bases with other substances may be administered in doses of from 0.1 to 0.5 gm. (2 to 8 grains). Caffein, the citrated caffein and theobromin are preferably given enclosed in a capsule or cachet or in the form of dry powder to be washed down with a copious draught of cold water. The combinations of caffein and of theobromin with sodium benzoate and sodium salicylate are readily soluble in water and are usually administered in the form of simple solutions.

The intravenous injection of caffein is not without its dangers; under no circumstances should caffein be injected rapidly into the blood-stream. The following experiments illustrate the danger: A cat required 150 mg. (2½ grains) per kilogram of weight to cause death, when a dilute solution was injected very slowly, but in another experiment the heart was stopped at once by the *rapid* injection of as little as 5 mg. (1/12 grain) of caffein per kilogram. It should be remembered that this dose corresponds to about 0.30 gm. (5 grains) of caffein for a man, or less than is commonly taken habitually by many persons daily in the form of tea and coffee without perceptible effects. When one recalls what was said regarding the effect of even fairly dilute solutions of caffein on skeletal muscle, he will appreciate the danger of rapid intravenous injections of even small amounts of caffein. If it is desired to inject the drug directly into the circulation, for which there is no apparent good reason in therapeutics, the dose should not exceed 0.20 gm. (3 grains), which should be dissolved in a fairly large amount of salt solution, and the injection should be made slowly, so that at least one minute should be consumed in the injection. It is not recommended that caffein be injected intravenously in therapeutic practice, however.

MATERIA MEDICA *

Physicians commonly object to using the beverages tea, coffee and cocoa, when the diuretic action of caffein and theobromin is desired, on the ground that too much water is thereby administered. The argument is not always well taken; every patient must have some water, and large doses of caffein and theobromin may be given with strong beverages without increasing the minimum of water, and absorption from the gastro-intestinal tract takes place promptly.

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 247*)

XVII

Whooping-Cough

This infection, which most frequently attacks children, is generally regarded by the public as a trivial disease, and consequently proper treatment and means of prevention of infection of others are frequently not instituted. Even the medical profession for many years did not consider the disease serious, but better statistics, demonstrating the causative agent of death-dealing complications, have shown that whooping-cough is a dangerous disease.

The greatest mortality of whooping-cough is indirect. A large number of those infected die of such complications as bronchial pneumonia, capillary bronchitis, tuberculosis and a few from hemorrhages, while chronic debility, anemia, emphysema, and some lesion of the central nervous system are of not infrequent occurrence. According to the United States *Public Health Reports*, in 1910, whooping-cough had a mortality of 11.4 per hundred thousand population, while scarlet fever had a mortality of 11.6, measles 12.3, and diphtheria 21.4. In young children and infants, whooping-cough causes more deaths than measles, and some statistics show twice as many deaths as measles; 95 per cent. of deaths from whooping-cough occur during the first five years of life, and the majority of these during the first two years.[1] The conclusion is self-evident that babies and young children must not be allowed to acquire whooping-cough if it is possible to prevent it. If the deaths which occur from the diseases which follow as complications from previous whooping-cough were properly recorded as secondary to whooping-cough, the seriousness of this disease would become even more evident than present statistics show.

There is no doubt that this disease is due to a contagium, and that this contagium is contained in the sputum and secretions of the upper air tract, and is transmitted to others by more or less close contact, either by droplets from spraying in sneezing or coughing, or by contact with infected handkerchiefs, napkins or bedclothes, or by contact with freshly sprayed or infected books, pencils, desks, chairs or eating utensils. Doubtless a frequent method of acquiring the disease is by kissing.

It is pretty well proved that the Bordet-Gengou bacillus is the cause of this disease. It seems to be established that the greatest infectivity occurs during the initial stages of whooping-cough, and that even during the active paroxysmal stage there is less liability of infection of others, and in the later stages there is probably no infective agent present. Some investigators even assert that a child should be allowed to return to school long before the paroxysmal stage is over, but that other children in the family of the child affected should not be allowed in school until it is shown that they will not have the disease. The disappearance of the infective bacillus and the consequent lessened danger of giving the disease to others seems to occur because some antibodies develop that prevent the further growth of the germ. It is certainly interesting that this contagious disease ceases to produce its contagium long before the symptoms of the disease have disappeared or the evident disease has ended. Whether or not this will be found true of scarlet fever and measles is of course not yet known, but it is markedly different from typhoid fever, pneumonia and diphtheria, in which the specific germs tend to persist a long time.

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* Owing to lack of space the materia medica of lobelia, camphor and caffein has been largely omitted. It will be included when this series is published in book form.

[1] Morse: Whooping-Cough, The Journal A. M. A., May 31, 1913, p. 1677.

It has been shown that some domestic animals may be experimentally infected with whooping-cough; how frequently such animals become accidentally infected and are able to transmit the disease to children is not known. Probably, however, such a source of infection is rare. Kittens, puppies and monkeys have been experimentally infected with this germ.

Mallory and Horner[2] confirmed the opinion that the Bordet-Gengou bacillus is the cause of the infection of whooping-cough. This is a minute bacillus, occurring in large numbers among the cilia of the epithelial cells of the mucous membrane of the trachea and bronchi. It is stated that the germ does not grow above the larynx, although of course by coughing it reaches these parts. This germ is a small coccobacillus, and resembles the bacillus of influenza.

This disease is so readily acquired from one infected that some boards of health not only prohibit children who have it from attending school, but also prohibit their attending Sunday schools or public congregations, riding in public conveyances, playing in public parks, playing with other children on public squares, and from entering stores and theaters. Not to cause these children to be isolated in their homes, when fresh air is of great benefit to them, the boards of health of certain cities order that the child shall be tagged in some manner, perhaps with a button on which "whooping-cough" is printed in plain lettering. Just how carefully such ordinances will be carried out, and just how much they will reduce the frequency of whooping-cough, will be determined after full trial.

This disease occurs largely in epidemics, and young children and babies are apparently most susceptible to the disease. This may be more apparent than real from two reasons: first, because young children, necessarily remaining more in the house, are liable more frequently to come into contact with concentrated infected matter if an infected person comes near them, and secondly, because a large number of older children and the majority of adults have probably had the infection and have become immune. However, when an adult or elderly person acquires the disease it is almost invariably severe. The muscular strength of adults makes the paroxysmal coughing of much greater danger; they are more liable to emphysema, heart strain and hemorrhage. They are not so liable to have pneumonic complications. Whooping-cough, however, even in adult life, is a not infrequent stimulator of a latent tuberculosis. Often an adult, who is in close contact with a whooping-cough patient, and who may have had the disease in childhood, develops a mild form of the disease: at least they have the catarrhal symptoms and cough spasmodically occasionally. Whether the Bordet-Gengou bacillus is present in these cases has not been determined. It is a fact, however, that ordinarily one attack of the disease renders a person immune.

From the foregoing it will be seen how very important it is to make an early diagnosis of whooping-cough. While it is stated that the Bordet-Gengou bacillus may be generally demonstrated in true cases, a method termed the "complement-deviation" test is urged by some investigators. When positive, it is almost conclusive evidence of the disease being present, and when negative conclusive evidence that the disease is not present. Friedlander and Wagner[3] make the statement that in their opinion "the complement-deviation test is of the greatest possible value in the diagnosis at all stages." A description of the technic of this test is given by them.[3]

As both the identification of the Bordet-Gengou bacillus and this complement-fixation test require considerable time and skilled technic, examination of the blood for leukocytosis is suggested as a quicker method of determining whether or not the disease is present. A small leukocytosis, from nine to ten thousand, may be present as early as the third day, while during the paroxysmal stage it may run up to sixty thousand or more. It has been considered that in a suspected patient a leukocytosis from fifteen to thirty thousand (other diseases that cause leukocytosis being excluded), combined with catarrhal symptoms and the opportunity for infection, would give presumptive evidence that the disease developing is whooping-cough. In this leukocytosis there is a relative increase of lymphocytes. It is stated that this leukocytosis may be more or less present for from two to three months, and that in the stages of improvement a mild eosinophilia is found.[4] While leukocytosis is generally present in whooping-cough, its diagnostic importance must always be modified by the possibility that some other cause of this increase in white cells is present. It should also be remembered that leukocytosis is often present in young children from various causes.

The incubation period of pertussis is not definitely known, and may vary from two to ten days; therefore before it is considered safe for a child exposed to this infection to return to school or to play with other children, at least ten days must have elapsed, and perhaps a better working rule is two weeks.

Pathologically, the disease manifests itself by a catarrh of the upper bronchial tubes, trachea, larynx and perhaps pharynx and nose. The secretion is mostly mucus, with perhaps, later, a mucopurulent discharge from secondary infections. There are conditions, moreover, caused by a severe paroxysm of coughing, or by a prolongation of these paroxysms, in other words, hemorrhages; perhaps more or less emphysema; always cardiac strain, and perhaps cardiac dilatation; and, if frequent or repeated coughing, anemia and emaciation. Hemorrhages may occur from the nose, in the eyes, or even in the brain.

The cough is laryngeal in type, is at first dry, and later becomes spasmodic and paroxysmal, thus differing from that of ordinary colds; that is, the coughs occur in series, more or less periodically, or in showers. With these paroxysms there is more or less closing of the larynx, with the attempt at inspiration through a narrowed glottis, which causes the characteristic whoop. These paroxysms increase in frequency as the disease progresses, and are precipitated by any change in the atmosphere and by suddenly breathing in cold air, as by laughing, and even by swallowing food, and they sometimes occur without any apparent cause, because of irritation from the germ and its consequences. The number of paroxysms in twenty-four hours varies, but there may be as many as fifty. Early in the disease there may be a slight fever.

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[2] Mallory and Horner: Jour. Med. Research, November, 1912. Mallory: Jour. Med. Research, March, 1913.

[3] Friedlander, Alfred, and Wagner, E. A.: Diagnosis of Whooping-Cough by the Complement-Deviation Test, Am. Jour. Dis. Child., August, 1914, p. 134.

[4] Kolmer, J. A.: The Diagnostic Value of a Blood Examination in Pertussis, Am. Jour. Dis. Child., June, 1911, p. 431.

TREATMENT

Unless the patient has considerable rise of temperature, it may not be necessary to put him to bed, but, especially with children, the paroxysms are generally diminished if the child is kept in bed for a time, or at least kept quiet. The more active the child, the more paroxysms. Consequently, even without fever, if a child vomits almost every meal, or if he coughs so severely as to cause hemorrhages, or shows that the right side of the heart is becoming strained (which is the side of the heart most affected), he must be put to bed and remain there.

In most communities a schoolchild with whooping-cough is immediately sent home. In only a certain proportion of communities as yet is whooping-cough a reportable disease. There is no question that it should be reported; that the child affected should be isolated as much as possible; that the infection of others should be prevented, if possible, and that other children in the same family and perhaps in the same household or tenement, who are attending school, should be sent home until the period of incubation is past, dating from the last contact with the infected patient.

The methods of contact have already been suggested, and it is needless to emphasize the necessity for the school authorities to cleanse and clean the desk, chair and immediate surroundings of the child, and the books, pencils, etc., that he used. Also the children who sat in close relationship to this infected child should be watched by the medical inspector, or, perhaps, scientifically examined, as suggested above (that is, throat secretions and blood) and those who show any signs of infection should be sent home until it is shown that they have not become infected. These preventive measures seem almost too severe or too great for a disease that has been considered so simple, but, as previously stated, the disease and its results are not simple, and the number of deaths among young children is very great. One of the greatest advances in preventive medicine will be in diminishing this disease that has been so long neglected.

Instruction should be given by the physician to the mother, or whoever cares for the child with whooping-cough, as to how the prevention of infection of others should be carried out, such as the care of handkerchiefs, napkins, etc. In communities where the disease is reportable, the board of health should send instructions to the family.

The actual treatment of this disease may be divided into four heads: (1) to prevent the infection of others; (2) to shorten the disease, if possible; (3) to diminish the severity of the paroxysms; (4) to treat complications as they occur.

The first indication has already been considered.

The second indication is met by general hygiene and by drugs. Fresh air and sunshine, without exposure, are among the greatest mitigators of this disease. If the weather is pleasant, the child should be out doors or on a veranda most of the time. A child does much better in the country or at the seashore, if the season and circumstances will allow it. If the child is too sick, or the weather is such that it is impossible to remain outdoors, he should be isolated in one, or better, in two large rooms, so that while one room is being thoroughly aired and cleansed he may go to the other one. There seems to be no question that the more infected or polluted the atmosphere of a room, the more the child will cough. Whether such an atmosphere simply irritates, or he reinfects himself instead of having his infection diminished, is unimportant. The fact remains that the ventilation must be excellent to diminish the frequency of the paroxysms.

Another important factor is nutrition. If the child vomits a meal as soon as he has eaten it, during a paroxysm, in a few minutes he should be given food again, with the probability that the next paroxysm will not so quickly occur but that the food may remain in the stomach and be digested. A child that receives insufficient nourishment from any reason should be given food more frequently. The character of the food should depend on his condition, and should be that which is found to be less frequently vomited. The best diet is cereal and vegetable, with milk and eggs. The end-products of meat metabolism are likely to raise the excitability and irritability of any one whose nervous system is irritated. For this reason meat should not be given, and no tea or coffee. A patient who is not allowed meat should receive a small dose of iron once or twice a day. Calcium in any simple form may be used as a nervous sedative and a nutrient. Hot baths before going to bed relax the nervous system and quiet the patient. Also massage is sometimes soothing. Of course, it is always essential to have the bowels move daily. Plenty of water should be given the child, as the more moist the mucous membranes, the less they are irritated, and the less frequent the paroxysms. For this object many inhalants have been advised. Perhaps the most important element of these inhalants, whether sprays or steam, is the water that they contain. Sometimes bland petroleum oils atomized and inhaled soothe the irritated mucous membranes.

Various antiseptics have been suggested. The most frequently used is perhaps phenol (carbolic acid) in some form, and very popular has been the vaporization of a phenol combination in the atmosphere of the room. There is no question that phenol tends to benumb peripheral nerves. If much phenol was absorbed it would disturb the kidneys. Exactly what are the germicidal constituents or powers of such inhalants has not been determined. Phenol sprays have been used in from 0.5 to 1 per cent. strength. Antipyrin as a spray and gargle has been much used as a germicide in from 5 to 10 per cent. strength, and has been much lauded in this disease. Quinin sprays, though more disagreeable, have been used in the throat as germicides. Various combinations with thymol and eucalyptol, and other mild aromatic antiseptics, have been used as sprays and gargles or inhalants. It is quite probable that a creosote or other antiseptic inhalant may inhibit the growth of germs in the trachea and upper large bronchi, provided the patient is old enough to cooperate and inhale the vapor into the lungs to that depth. As an application in the pharynx and mouth, hydrogen peroxid solutions, 1 : 5, would be as efficient as anything that could be offered. Many times, however, these "antiseptic" inhalants or atomizing substances cause irritation and paroxysms, and must be abolished, while mild alkaline solutions, well represented by ¼ teaspoonful of sodium chlorid and ¼ teaspoonful of sodium bicarbonate in a glass of warm water, cleanse and soothe the throat without causing paroxysms.

There are still many who believe that quinin given internally will shorten the disease. It has not yet been shown that quinin inhibits the growth of the Bordet-Gengou bacillus. If there is any tendency to secondary infection in the nasopharynx, with congestion of the ears, of course quinin should not be given.

Also, to meet this indication and shorten the disease is the vaccine treatment. The exact value of vaccine in this disease has not been demonstrated.

Sill[5] made a study of this treatment in whooping-cough, and found that the dose of the bacillus should be 50 million, and this dose given every other day in ordinary cases, and every day, or 100 million every other day, in severe cases. The injections were given into the abdomen or buttocks. He thinks that the average dose should be determined by the severity of the disease, and not by the age of the child, and he vaccinated a child even as young as 1 month old. He feels sure that the length of the paroxysmal stage of the disease is diminished, and that the paroxysms are diminished in severity.

Immunizing doses, to prevent the development of the disease in other children of the family, have been given in doses of 20 million bacilli, and the dose repeated four or more times, and the disease has been apparently prevented by such vaccination. More recently Hess[6] has made a careful study of the vaccine treatment of whooping-cough, and was disappointed in this treatment of the disease; but he did find that in a certain percentage of cases immunizing doses prevented the development of the disease, although this prophylaxis was far less efficient than is typhoid vaccine in preventing typhoid fever. Positive conclusions, therefore, as to the value of vaccine treatment in whooping-cough cannot yet be made.

The third indication, namely, to diminish the severity of the paroxysms, is of great importance. It has already been stated that the more quiet the child, the less frequent will be the paroxysms. Also, if the child lies down as soon as he begins to cough, he is less likely to vomit. An elastic abdominal belt seems to be of value in controlling the vomiting and the paroxysms of young infants especially. In some patients the paroxysms are so severe that chloroform inhalations have been given to prevent the intensity of the spasms. Also, it has been stated that inhalations of chloroform actually lengthen the time between the paroxysms and shorten the disease. Chloroform inhalations may act as a germicde. On the other hand, the frequent administration of chloroform, even in small doses, is known to injure both heart and kidneys.

The most effective of all medicinal treatments, in the opinion of several authorities, is antipyrin and digitalis. A very good rule for the dosage of antipyrin is 0.05 gm. (about 1 grain) for every year of the child's age. This should be given three or four times a day, depending on the frequency of the paroxysms. The frequency should be diminished as the frequency of the paroxysms diminishes. Coincident with the antipyrin should be given digitalis in the form of the tincture, and in the dose proper for the child's age, and determined by its effect on the child's heart and pulse. The heart needs help, both from the strain of the disease and also as antipyrin might cause some weakening of the heart. The antipyrin acts by causing less irritability of the nervous system and relaxing muscle spasm. Even although the drug has disadvantages, its disadvantages are much less than the harm caused by the whooping-cough paroxysms.

The bromids have been frequently given and in large doses. They act by inhibiting the reflex activity of the nervous system and by more or less dulling the peripheral nerves in the throat and upper air passages. Chloral has been used in order to depress the nervous irritability. Atropin or belladonna have been given in large doses, and their value must be in dulling the peripheral nerves in the irritated part of the body. Atropin is a stimulant, and cannot have any good effect in this disease, unless the dose is very large, and with such large doses atropin intoxication readily occurs, that is, the pulse becomes rapid, the throat dry, the face flushed, and there is likely to be cerebral excitation and perhaps dilated pupils.

Antipyrin is best given to a child in solution, as follows:

	Gm. or c.c.	
℞ Antipyrinae	5|	ʒ iss
Aquae menthae piperitae...	100|	fl℥ iv

M. et Sig: A teaspoonful, in water, three or four times a day.

This dosage is for a child 5 years old.

Various hydrotherapeutic measures are often of value, and the hot bath is always useful in quieting the patient and relieving internal congestions.

The fourth indication, namely, to treat complications as they occur, is almost supererogation, as each complication calls for its proper treatment. However, under this heading the prevention of such complications may be urged. Vomiting may be prevented by quiet, rest for a while after eating, by the abdominal belt and by proper food. Nutrition must be kept up at any cost, and, if necessary, the child given simple liquid nourishment every three hours. Not infrequently cod-liver oil is well borne and is an oil nutriment of great value. Anemia must be prevented by iron. If it is seen that the heart is becoming strained, and the face and throat remain congested even after the paroxysm is over, showing that the right ventricle is in trouble, digitalis should be given and such rest as would be given any damaged heart. This treatment also tends to prevent hemorrhages. Even if the child is weak and the circulation is weak, strychnin is inadvisable, as it stimulates the nervous system and causes or allows more paroxysms to occur.

If the child has a history of enlarged glands or recurrent colds, or has inherited a tendency to tuberculosis, or tuberculosis has been present in the child's family, its convalescence after whooping-cough should be prolonged, and country or seashore air should be urged where possible. Certainly, such a child should not be confined in school until his nutrition has become as good as before the infection with whooping-cough occurred.

(To be continued)

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[5] Sill, E. M.: The Vaccine Treatment of Whooping-Cough, Am. Jour. Dis. Child., May, 1913, p. 379.

[6] Hess, A. F.: The Use of a Series of Vaccines in the Prophylaxis and Treatment of an Epidemic of Pertussis, The Journal A. M. A., Sept. 19, 1914, p. 1007.

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SATURDAY, JANUARY 30, 1915

THE BACTERIOLOGY OF THE WOUNDS IN THE WAR

Precisely as the European conflict has developed hitherto unused and unexpected methods of warfare, so it has brought with it new problems in military surgery and new aspects of surgical bacteriology. In previous issues of The Journal[1] we have published foreign correspondence indicating the peculiar nature of some of the wounds encountered and referring to some of the characteristics of the suppurations and wound infections and their consequences following the injuries received on the battlefields. The detailed reports[2] of some of the bacteriologic investigations which have been conducted in the French hospitals furnish an interesting account of the microbial flora of the wounds in this campaign, and serve alike to explain some of the consequences and to indicate the surgical procedures that may be called for in the management of the wounded on the French and Belgian frontiers. Examinations made in Metchnikoff's laboratory[3] in Paris indicate that so-called aseptic wounds, such as are produced by bullets and do not suppurate, are frequently free from micro-organisms. Saprophytic forms are found in rare instances and may include members of the proteus group, of which the pathogenic power is recognized to be usually slight. The proteus infections heretofore reported in man have almost invariably occurred in combination with some other micro-organism. The *Bacillus putrificus* (Metchnikoff) has also been found in such wounds, from which the organisms disappear in the course of a few days.

The list of pathogenic bacteria includes in greatest prominence pyogenic cocci, streptococci occasionally being found in almost pure culture, notably in penetrating wounds of the skull and in simple bullet wounds of limbs. The streptococci isolated are described to be of only slight virulence, and erysipelas is reported in few instances at most. The staphylococci, so frequently encountered in the surgical lesions of animals and man, accompany the streptococci in most of the open wounds, particularly when septic foreign substances such as shrapnel balls, fragments of shells and pieces of clothing are present. The wounds infected by these two groups of organisms rarely prove offensive. After drainage and suitable packing with antiseptic gauze, they heal readily and never present a gangrenous appearance.

An added danger, however, rests in the occurrence of the *Bacillus aerogenes capsulatus,* widely known also as the *Bacillus welchii* and in France as *B. perfringens,* though they are sometimes described separately. This organism, according to Doyon and Yamanouchi, has been found associated with staphylococci and streptococci in all the purulent wounds in the cases examined by them in which there was superficial or localized gangrene, benign phlegmonous conditions, or emphysematous gangrene (the *gangrène gazeuse foudroyante* of French writers).

The observation of the presence of the same organism, *Bacillus aerogenes capsulatus,* in the comparatively healthy wounds as well as in those exhibiting subcutaneous emphysema, presents a difficult problem in surgical bacteriology. Apparently it can exist as a harmless saprophyte in the pus of open wounds in the process of healing. It has, of course, long been recognized that the pathogenicity of this organism may be slight, and that its virulence is subject to great variations. Usually, when the infection follows traumatism on the extremities, it is characterized by a rapidly necrotizing inflammation with which there occurs extensive subcutaneous emphysema, and becomes extremely grave. The differences in apparent virulence thus far noted by the French bacteriologists are apparently associated with the differences in the location of the wounds. When the latter are superficial, the severer symptoms attributable to the gas-producing bacillus do not occur; they arise in the deeper parts, in which the environment and closed spaces are more favorable for the propagation of an organism that is preferably anaerobic.

If to the preceding is added the occasional finding of the organism of tetanus, the excitatory agents of the septic and systemic conditions observed are covered for a large number of the cases. The pathogenetic flora appears to be surprisingly uniform in character and to have possessed a relatively feeble virulence up to the time of the present reports. The risks involved depend on the nature of the wounds received, their depth, their ramifications, and the degree of traumatism. So far as bacteriologic considerations and infections are concerned, the surgeons are learning to distinguish the types and to treat them in a discriminating way rather than by a fixed routine of wound management. They take into cognizance the fact that whereas in most localities wound infection is almost exclusively due to staphylococci and streptococci, on the Franco-Belgian border anaerobic gas-forming organisms are present along with them. Explanation of this has been ventured from several sources. The *Bacillus aerogenes capsulatus* and other anaerobic forms reported are frequently present in the normal intestinal contents, where their presence in abnormally high proportions is indicated by a Gram stain of a smear of the feces. In a report to the sanitary service of the British army in France, Weinberg[4] therefore argues that it is logical to assume that the anaerobic organisms found in the wounds are originally of intestinal derivation. The earth in the trenches from which those suffering with emphysematous gangrene and harboring the Welch bacillus were taken is often soiled with human dejecta and manure. Remnants of filthy clothing likewise find their way into the wounds.

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[1] The Wounded, London Letter, The Journal A. M. A., Nov. 7, 1914, p. 1683; The Treatment of Wounds Received in Battle, Paris Letter, Nov. 21, 1914, p. 1868; Treatment of the Wounded, London Letter, Nov. 28, 1914, p. 1966; Treatment of Gangrenous Military Wounds, Dec. 12, 1914, p. 2145.

[2] Doyon and Yamanouchi: Flore bactérienne des plaies de guerre, Compt. rend. Soc. de biol., 1914, lxxvii, 503 and 512. Weinberg, M.: Recherches bactériologiques sur la gangrène gazeuse, ibid., p. 506; Remarques à propos de la communication de MM. Doyon et Yamanouchi, ibid., p. 515.

[3] Doyon and Yamanouchi: Compt. rend. Soc. de biol., 1914, lxxvii, 503 and 512.

THE EXTENT AND SPREAD OF ROCKY MOUNTAIN SPOTTED FEVER

Since 1902 it has been generally recognized that Rocky Mountain spotted fever is a disease that prevails in certain localities in the Western States. As a result of researches, notably those of Wilson and Chowning, Ricketts and his associates, and of representatives of the Public Health Service, we now have definite knowledge as to the means by which the disease is spread from individual to individual and from one locality to another. A recent report[5] by the Public Health Service on this disease shows it to be present in nine Rocky Mountain and Pacific Coast States. Cases have been reported during more than one tick season from certain localities within these states, and these localities are recognized as being definite areas of infection; that is, they harbor infective wood ticks capable of transmitting Rocky Mountain spotted fever to human beings by their bites.

Outside of the Snake River Valley in southern Idaho and the Great Basin region, the infected areas are rather definitely outlined and small in extent as compared with the total territory in which they are included. Thus the disease is known to be present only in restricted areas of southern and southwestern Montana, southeastern Washington and northeastern California. It is probable that further investigation and the settlement of uninhabited regions in these states may show other isolated areas of infection, but there is no reason for believing that the older communities which have been free from the disease will not remain so unless infective ticks are introduced and the infection thereby established in the community. There is no evidence to show that Rocky Mountain spotted fever has been introduced into any of the present known areas of infection within very recent years, cases having been reported from the different regions involved since the disease was first recognized.

The epidemiologic study of Rocky Mountain spotted fever, however, has been both too brief and too incomplete to enable us to determine whether the disease is at present spreading into uninfected territory or what the danger of its future spread may be. Under ordinary conditions, wood ticks remain close to the place where they are hatched, and none of the animals which have been found susceptible to Rocky Mountain spotted fever infection are great travelers. Also, since the infection in animals is an acute condition, lasting not longer than two weeks, there is slight danger of their spreading the disease in the way that rats may spread bubonic plague.

For these reasons it is believed that the usual way in which the spread of Rocky Mountain spotted fever takes place is by means of infected adult wood ticks attached to their animal hosts, either domestic or wild. These large animals, which may serve as hosts for the adult ticks, may travel many miles before dropping the engorged ticks, and the distribution of the infected areas along the water courses in the Northwest seems to point to this as the probable method by which the infection was spread by deer, elk, buffalo and range cattle.

It would seem also that a real danger exists in the shipment by rail of elk and domestic animals which may harbor infected ticks to points within a radius of at least ten days' travel. It has been found that eastern ticks are capable of transmitting Rocky Mountain spotted fever experimentally, and it is conceivable that infected ticks introduced in this way into any heavily tick-infested part of the United States might establish foci of infection. The process would probably require very favorable conditions and several years' time for its completion. In the meantime the introduction of the ticks will have been forgotten and the true nature of the first case perhaps remain unsuspected.

For these reasons it will be well if physicians, particularly those practicing in rural districts throughout the United States, keep a watch for suspicious cases occurring in the spring and early summer among their patients who have been exposed to tick bites, and that the cases when recognized be reported.

A point of great practical value in Fricks' report[5] is in regard to the value of sheep-grazing as a means of tick eradication, which was first suggested by the same author[6] in 1913 and to which we referred at the time.[7] According to Fricks, the four factors on which the success of sheep grazing as a tick eradicative measure depends are, first, the removal of undergrowth and the consequent destruction of good tick country by close grazing; second, the destruction or removal from the sheep range of other mammals, domestic and wild, which may serve as hosts for adult ticks; third, the destruction of the ticks themselves, principally by tangling themselves in the wool of the grazing sheep; fourth, the placing of the problem of tick eradication on an economic basis, so that it may be carried out on an extensive scale without cost to the government, the state or the inhabitants of the valley.

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[4] Weinberg, M.: Recherches bactériologiques sur la gangrène gazeuse, Compt. rend. Soc. de Biol., 1914, lxxvii, 506.

[5] Fricks, L. D.: Rocky Mountain Spotted Fever: A Report of Its Investigation and of Measures Undertaken for Its Eradication During 1914, Pub. Health Rep., Jan. 15, 1915, p. 148.

The experiments made during the past season were conducted with two bands of sheep numbering about 1,500. The experiments were begun about the middle of April and terminated about the middle of July, when the sheep were sheared, dipped and returned to their owners. During the experiments, sheep of both bands were searched for dead and live ticks, and it was estimated that over 25,000 adult ticks were destroyed by the 1,500 sheep during this period.

All the observations so far made point to sheep grazing, certain important principles being borne in mind, as a practical, rapid, efficient and economical method of tick eradication in the Bitter Root Valley.

MEDICAL SCHOOL ATTENDANCE

In an article on university registration statistics, *Science*[8] furnishes a tabulation of the attendance at thirty of the universities of the country. The editor suggests that there is a theory that universities and colleges have unusually large increases in numbers of students when national economic conditions are at a low ebb, that is, during "hard times." The registration statistics presented in the article referred to seem to bear this out. The period of depression in the early portion of 1914 was prolonged by the declaration of war. Perhaps as a consequence, at least as a coincidence, three universities, Columbia, California and Pittsburgh, gained over 1,000 students each in all departments; six, Ohio State, Wisconsin, New York University, Minnesota and Pennsylvania, gained more than 500, and five others, Illinois, Nebraska, Cornell, Cincinnati and Michigan, gained over 300.

It is usually said that the increase of registration in hard times is particularly to be noted in the professional schools, apparently because business reverses make men realize that the mental capital required for professional work is of greater permanent value than the more material resources demanded for commercial and financial success. There is a noteworthy increase of registration in dentistry; the University of Pennsylvania has 663 students enrolled in its dental department; Northwestern, 578; Michigan, 318; Iowa State, 302; Minnesota, 253; Pittsburgh, 227, and Harvard, 204. The remarkable increase in all the departments of the University of Pittsburgh has brought that institution into a prominent place in the statistics, for it gained altogether 1,069 students. This gain was exclusive of any addition in numbers from attendance at summer sessions, which swelled the figures for other institutions.

The statistics referred to show that our universities now begin to rival even the largest of the foreign universities in the numbers of students registered. During the present year, and while the war lasts, there will of course be much more educational activity in this country than in any of the countries of Europe. The following universities now have more than 5,000 students in attendance: Columbia, 11,294; California, 8,180; Chicago, 7,131; Wisconsin, 6,696; Pennsylvania, 6,505; Harvard, 6,411; Michigan, 6,319; New York University, 6,142; Cornell, 5,939; Illinois, 5,664.

In regard to the number of medical students, however, the increase shown by the statistics cannot be taken as an index of the enrolments in all medical schools. Statistics gathered by the Council on Medical Education show that practically all of the medical colleges which had adopted higher entrance requirements prior to the beginning of the present session had increased enrolments. Instead of being due to hard times, however, this increase was doubtless influenced by the extensive agitation in recent years pointing to the need of a better preliminary education for students who were to enter on the study of medicine. A more immediate factor, perhaps, is that thirty-seven other medical colleges at the beginning of the present session put into effect for the first time the requirement of one year of collegiate work, in addition to the usual high school education. These thirty-seven colleges naturally had smaller enrolments which more than offset the increased registrations in the colleges referred to above. Incidentally, even the increased registration in dental colleges may have been due less to hard times than to the higher entrance requirements of these thirty-seven medical colleges.

Altogether, instead of there being an increase in the enrolments of medical colleges during this session, it is quite evident from the figures gathered by the Council on Medical Education that there will be a decided decrease. Of about sixty-five medical colleges from which reports have been received, enrolments show that this decrease will be about 8 per cent., as compared with from 3 to 6 per cent. in each of the last few years. The raising of the standards for admission to medical colleges, therefore, has had a favorable effect in decreasing the number of those who take up medicine as a life work. The number has been reduced to nearly the normal supply for this country, and that supply will be much better qualified.

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[6] Fricks, L. D.: Pub. Health Rep., Aug. 8, 1913.

[7] Eradicating Rocky Mountain Spotted Fever, editorial, The Journal A. M. A., Sept. 13, 1913, p. 871.

[8] Science, Dec. 25, 1914.

CALCIUM AND PARATHYROID TETANY

The removal of the parathyroid glands generally leads to early death preceded by very characteristic nervous and muscular disturbances described under the name of tetany. Various attempts have been made to bring this pathologic phenomenon into a causal relation to a deficiency in calcium in the circulating fluids. Removal of the glands has been alleged to be attended with a loss of calcium, on the one hand, and the injection of salts of this element has repeatedly been demonstrated to suppress the tetany symptoms in affected animals. It is quite conceivable, however, that such an effect of introduction of calcium is due to a sedative action instead of a restoration of an element which may be assumed to be available in abundance in an organism possessed of a bony skeleton.

Experimental investigations in the department of pathology at Columbia University, New York, have attacked the question of the relation of calcium salts to tetany in a somewhat new way.[1] Normal blood was dialyzed in such a manner as to remove from it a large part of its calcium. The dialyzed blood when perfused through an isolated extremity produces an extreme hyperexcitability of the nerves quite like that observed in tetany. Since perfusion with blood dialyzed in precisely the same way against a fluid of the same composition, but containing calcium in the proportion found in the normal blood, causes no hyperexcitability of the nerves, it is evident that the hyperexcitability is due to the lack of the element. This effect can be attained in only a slight degree by replacing the blood of a whole animal with the dialyzed blood, since under the conditions of the experiment the tissues cannot be sufficiently depleted of their calcium. It seems probable to the New York investigators that the parathyroid secretion is not removed by dialysis, but is returned to the body with the dialyzed blood.

To bring this result into relation with the condition in tetany following parathyroidectomy, animals in tetany were bled by MacCallum and his collaborators and the blood was replaced, in one case with normal blood, in the other with dialyzed blood poor in calcium. The normal blood is said to relieve the tetany and lower the excitability immediately, whereas the dialyzed blood does not. This is the further evidence now presented to maintain that in the tetany of parathyroidectomy also the twitching and the hyperexcitability of the nerves is due to lack of calcium in the blood and tissues. An added bit of hypothesis — it must not be taken more seriously — is that the parathyroid secretion governs the conversion of a nondiffusible and physiologically useless combination of calcium into a diffusible form which is essential in maintaining the control of the excitability of the nervous system. It is suggested that the essential product is lost in the excreta and not formed anew in the absence of parathyroid secretion.

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[1] MacCallum, W. G.; Lambert, R. A., and Vogel, K. M.: The Removal of Calcium from the Blood by Dialysis in the Study of Tetany, Jour. Exper. Med., 1914, xx, 149.

HISTOGENESIS OF NEUROMA, AND REGENERATION OF PERIPHERAL NERVES

So long ago as 1859, Bidder and Kuyfer originated the conception that axis cylinders grow outward from the nerve cells, and that regeneration of nerve fibers is a result of proliferation of the distal end of the axis cylinders, each cylinder having at its end "an incremental cone of growth." This view, which long has held sway, is now being questioned. It has been found that undifferentiated cells from the early medullary tube or neural crest, after remaining undeveloped and dormant in the tissues, may take on activity and, it is asserted, develop into nerve fibers. As seen in neuromas, Weichselbaum interpreted such undifferentiated cells as cells of the sheath of Schwann. Kennedy,[1] on examination of specimens from both ends of a nerve previous to its suture, found irregularly arranged groups of new nerve fibers both centrally and peripherally, and on the distal side were enormous numbers of spindle-shaped nuclei among the nerve fibers which he thinks had arisen by proliferation from the nuclei of the sheath of Schwann. Head and Ham[2] have shown that the ununited distal end of a nerve may remain in a "resting stage" for as long as 540 days. If then united to the central end, it is completely restored. This return to function seems too rapid for the proximal axis cylinders to have grown out to the structures originally supplied by the nerve. Recent observations by Bruce and Dawson[3] on neuromas of the central nervous system are of interest in this connection. Their observations and review of the literature are so complete that practically all that is known of the structure and histogenesis of true neuroma is stated in their article.

In their case, numerous small nodules were scattered through the pons, medulla and the spinal cord, which varied in size from microscopic groups of cells in the midst of fiber tracts or in the wall of a vessel to larger nodules easily visible and displacing the structures about them. In the cord the nodules were formed always in relation to the pia, pial septa or the adventitia of the blood vessels, both the vessels passing into the cord from the pia and those within the cord. In the pons and medulla the nodules were present in both motor and sensory tracts, and were here also closely related to the walls of vessels. The neuromatous growth appears in the pons and medulla to arise as patches among the fiber tracts, and consisted of cells derived from the sheath of Schwann, which were fusiform and joined each other end to end to form nucleated, protoplasmic tubes pushing along the pial spaces. Small or large bundles of these tubes were found. The number of tubes in each bundle varied from three to twelve or more. These tubes developed central filaments which later became axis cylinders, and about them beginning myelin sheath formation was observed. Complete myelinization did not occur, however, unless the new-formed nerve tube became connected with a central nerve cell through its axis cylinder. These new fibers pushed along the adventitia of the vessels and followed the paths of the glia fibrils or along the pial spaces, most likely because these were paths of least resistance. When obstruction was encountered, they became twisted and tangled, and tended to whorl formation. A section through a nodule at this period in its development gave the appearance of a patch of interlacing, nucleated fibers and protoplasmic tubes twisted and coiled about each other. There were numerous blood vessels in these meshes. Still later, fibrous elements would become more prominent, and tended to displace and conceal the nerve fibers.

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[1] Kennedy: Regeneration of Peripheral Nerves, Tr. Roy. Soc. London, 1887, B, 188, p. 257; On the Histological Changes Occurring in Ununited Divided Nerves, Brit. Med. Jour., 1904, ii, 729.

[2] Head and Ham: The Process of Regeneration in an Afferent Nerve, Jour. Physiol., 1904-1905, xxxii, 9.

[3] Bruce and Dawson: Multiple Neuromata of the Central Nervous System: Their Structure and Histogenesis, Review of Neurology and Psychiatry, 1913, xi, Nos. 3 to 7, pp. 117, 179, 235, 293.

In the cord the nodule formation was similar, first starting from proliferated cells of the sheath of Schwann. Protoplasmic tube and whorl formation proceeded as in the brain. Here, however, the tumors were further advanced, and the histogenesis of the neuroma determined with much greater difficulty, owing to the secondary changes in the nodules, namely, fibrosis and sclerosis, which tended to destroy the nerve elements. In a few of the older tumors, individual fibers were found coming in direct contact with nerves of the anterior horn region. About the posterior roots of the cord no tumors were found, but considerable fibrosis had occurred, resulting in degeneration of the nerve sheaths in the fibrosed areas. No passage inward of new nerve fibers into the intermedullary spaces could be found here.

Naturally Bruce and Dawson, influenced by their observations, favor the view that detached neuroblastic cells give rise to true neuromas and to regeneration of nerves. Like other "peripheralists," however, they do not dispute an important influence of the central cell body on the peripheral nerve which aids in completing the myelinization of the nerve fiber and in restoring function.

The Most Difficult Art.—Accurate observation is by far the most difficult art which mankind has ever essayed. A nation may count on furnishing abundance of military talent, plenty of politicians and statesmen, enough of competent lawyers; it may even hope to have gifted artists and authors; but it can scarcely expect to produce a single master of the art of observation in a century. In a century Germany produces one Helmholtz, France one Pasteur, England one Darwin—an American peer of these three is yet to become known.—Minot.

Current Comment

USING THE MEDICAL PROFESSION AS AN ADVERTISING AGENCY

The Journal has called attention repeatedly t the way in which the medical profession has bee used by the exploiters of proprietary medicines fo the purpose of introducing their wares to the public. In the past, one of the cheapest methods o putting a "patent medicine" on the market has bee to call the stuff an "ethical proprietary," advertise i exclusively in medical journals (whose advertising rates are much less than those of newspapers), freely sample the medical profession, put up the product in packages that are plainly intended to give the public all the information that may be necessary—and let time do the rest. And time has done it. When physicians have awakened to the fact that they have once more been used as tools, and the preparation is very plainly nothing but a nostrum, then the shrewd manufacturer turns his back on the medical profession and goes over openly to the place he belongs—the public press. The Advertising Association of Chicago, in its weekly bulletin for Jan. 4, 1915, prints a letter that has been received by an American advertising man from a German firm that wanted to place a medicinal product on the American market. One paragraph in the letter bears on the matter under discussion. Here it is:

> "We beg to mention that the preparations are to be puffed in the first rank and principally so that the physicians (doctors) get acquainted with the same, and it is not necessary to puff them *for the present* in other classes of the public."

We have italicized the three words that have a special significance. Put more crudely, the proprietors of this preparation say: Advertise it at first exclusively to physicians and after they have brought it widely to the attention of the public, then it will be time enough for us to advertise it direct to the public. How long is the medical profession going to retain its unenviable distinction of being a huge advertising agency for the nostrum exploiter?

OSWALD LOEB

There are few pharmacologists capable of doing research work of the highest order, and, at the same time, well-informed, and interested in the broader problems connected with the use of drugs. It is still more rare to find a man thus qualified who has the courage to criticize fearlessly whatever partakes of fraud, humbuggery or exaggeration connected with the exploitation of drugs. Such a man was Oswald Loeb of Göttingen, whose death, while serving at the front with the German army, we briefly noted in our issue of Nov. 21, 1914. We have frequently called attention to the propaganda for reform in proprietary medicines which Professor Heubner, corresponding member of the Council on Pharmacy and Chemistry, head of the department of pharmacology at Göttingen, and one of the editors of the *Therapeutische Monatshefte*, has for some time been carrying on in Germany against great odds, and to the German Arzneimittelkommission, the aims of which are similar to those of our Council on Pharmacy and Chemistry. In this work Professor Loeb took a prominent part, and his critical discussion of new drugs in the *Therapeutische Monatshefte* will long be remembered; he brought to this usually unpopular and thankless work the same earnest love for truth and keenly critical attitude that characterized his research work. As one of the many possible examples of the manner in which he approached new drugs, his discussion of Elarson may be cited.[1] This is a new arsenic preparation put forward by Emil Fischer and G. Klemperer, names held in such high esteem that most writers seem to have been deterred from even questioning their claims. Loeb reviewed their publication, and concluded: "All this is not remarkable; it is also not remarkable that one arsenic compound sometimes succeeds when another seems to fail. When the authors remark that new arsenic compounds do not seem to them to be superfluous, the question arises if this new preparation is not really superfluous. Cannot the same results be obtained with the well-known Fowler's solution, and also, by the administration of smaller doses, not only the patient's alimentary tract but his purse be protected? . . . The clinical reports so far made do not prove that the materia medica has been enriched by it." This questioning attitude concerning Elarson seems to have been fully justified by the recent pharmacologic studies of Joachimoglu.[2] In these days, when critical readers have been forced to view with skepticism much of what appears in German medical publications concerning new drugs, when they feel that these are too often being tried before judges and juries more or less financially interested in the verdict, it was refreshing to read the discussions of Loeb and his co-workers in the *Therapeutische Monatshefte,* and we join the editorial staff of that publication in expressing our appreciation of his work and sorrow at his untimely death.

FOOD OF THE TSETSE FLY

Inasmuch as the tsetse flies are now recognized to play a very important rôle in the transmission of infectious organisms connected with the tropical diseases of both man and animals, every feature in the life habits of the insects becomes a matter of medical interest. The sleeping-sickness areas of Africa abound in swarms of these flies. They suck the blood of individuals infected with trypanosomes and thereupon become the carriers of these biologic agents and transmitters of diseases caused by them. The question has arisen whether the tsetse flies habitually feed on blood or whether other types of food are acceptable to them. The members of the Scientific Commission of the Royal Society of London, in Nyasaland, 1912-1914, under the leadership of Surgeon-General Sir David Bruce,[3] have examined the alimentary tracts of a large number of the flies caught in one of the fly areas in Nyasaland. The insects were all caught in the bush, away from the paths. The microscopic inspection showed that the food of the species investigated, *Glossina morsitans,* consists mainly of mammalian blood. Of the 500 flies examined, 288, or 57.6 per cent., were found to contain this in a recognizable state. No measurements were made of the corpuscles, which in most cases were much altered by the digestive processes; but there seemed to be a predominance of the small type of cell, such as occurs in the hartbeest, waterbuck and other antelopes. Of the flies which contained recognizable blood, only 1 per cent. exhibited nucleated blood, which was probably avian rather than reptilian. In no case was vegetable matter noted in the intestinal contents. From such experiments as were conducted in the laboratory it was conjectured that the flies feed naturally at least once in every five or six days. There is no difference in the feeding habits of the males and females.

IMMIGRATION PROBLEMS OF THE FUTURE

Among the many far-reaching effects of the present European war, the influence exerted on immigration assumes a prominent place. The end of the last fiscal year saw a total of 1,485,957 added to our population from this source.[1] The influx of immigration proceeded at the normal rate until it was given a sudden check by the declaration of war in August, when the average daily landing of 3,000 or more at Ellis Island became barely that many a week. There seems to be a general agreement that the cessation of the war will see a renewal of the flood of immigrants which will surpass anything heretofore experienced. The country is alert to this possibility, and preparations to meet the expected increase are already in evidence. The proposed changes in our immigration laws will, if enacted, enforce more rigid physical requirements than any previous legislation on this subject. There is no doubt that the country needs these added safeguards. The truth of this statement is forcibly illustrated by that section of the report of the Committee on Inquiry into the Department of Health, Charities, and Bellevue and Allied Hospitals of New York City, which deals with aliens in institutions.[2] The committee examined, as far as practicable, every patient admitted to Bellevue for a period of thirty-one days from May 19, 1913, to June 18, 1913, inclusive. Of the 3,454 admissions during that period, 363 were aliens who had been in the United States less than five years. The physicians who examined these aliens believed that there were 185 of them suffering from diseases caused by conditions which existed prior to landing in the United States. Among these were 10 cases of pulmonary tuberculosis; 15 cases of venereal disease; 81 psychopathic cases; 2 cases of epilepsy, and 2 of imbecility. This made a total of 110 patients in one month whose admission to the United States was contrary to the federal immigration law. Taking this month as a basis, the committee estimates that in one year Bellevue Hospital would receive 1,345 alien patients whose exclusion from this country is mandatory under existing federal statutes, while the total number of aliens who would be patients from causes existing prior to landing would be 2,262 yearly. This large number of physically and mentally defective aliens have succeeded in passing the examinations at entrance primarily because there are totally inadequate facilities for examining such a large number in the time allotted for the work. Now that immigration has declined to 3,000 a week, the physicians at Ellis Island have been able to make more thorough examinations. As a result of this intensive scrutiny, the percentage of defects noted has increased from the former 2 or 3 per cent. to about 7 per cent.[3] The difference in the results obtained suggests the advisability of urging the Department of Labor to provide the increased facilities which will be absolutely necessary if the physicians continue their present thorough methods of examination when immigration resumes its normal course.

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[1] Loeb, Oswald: Therap. Monatsh., 1913, xxvii, 211.

[2] Joachimoglu: Arch. f. exper. Path. u. Pharmakol., 1914, lxxviii, 1.

[3] Bruce, David: Hamerton, A. E.; Watson, D. P., and Lady Bruce: The Food of Glossina Morsitans, Proc. Roy. Soc. (B), 1914, lxxxviii, 41.

[1] Annual Report of Surgeon-General, U. S. P. H. S., 1914, p. 196.

[2] Report of the Committee on Inquiry into the Departments of Health, Charities, and Bellevue and Allied Hospitals, New York, pp. 141-147.

MYSTERY, THE ESSENTIAL

The entire superstructure of fraud in medicine has for its foundations secrecy and mystery. Take away these elements, and that gigantic monument to human credulity—the "patent medicine" business—crumbles. Hence the frantic efforts of those who have built fortunes through the exploitation of nostrums in opposing every movement that would permit the public to know the drugs it is taking in "patent medicines." About a hundred and fifty years ago Mrs. Stephens in England claimed to have discovered a cure for "gravel and stone in the bladder and kidneys." So skilfully did she call her wares that she deluded ignorant and educated alike into a belief in her discovery. Dr. David Hartley, physician and philosopher, collected and published reports of one hundred and fifty cases—his own among them—showing the value of Mrs. Stephens' "cure." Convinced that Mrs. Stephens had discovered a boon to suffering humanity, many urged her to make public the secret of her formula. Quack-like she refused, but—also quack-like—she offered to give up the formula for five thousand pounds ($25,000). Attempts were made to raise this amount by public subscription, but without success. In spite of the fact that many contributed to this fund, only about thirteen hundred pounds was raised. Parliament was then petitioned to make a grant, which, in due time, it did. Mrs. Stephens got her five thousand pounds and the public got her "formula." The latter was published in the London *Gazette*. The "cure" consisted of egg shells, snails (shells and all), hips and haws, ash-keys, swine cress and various other vegetables all burned to a cinder and the ash mixed with camomile flowers and fennel and other vegetables. But alas! Now that the public knew what was in Mrs. Stephens' nostrum, it would have none of it. The cure fell into disrepute, and finally went the way of all such frauds, into oblivion. Dr. Hartley died of the disease of which he believed Mrs. Stephens had cured him.

HEAT, HUMIDITY AND WORKING POWER

The question as to what constitutes a vitiate atmosphere, and wherein the depressing effects o "bad" air are to be found, was recently considered i The Journal.[1] Of late, temperature and humidit rather than abnormal quantities of the respired gases carbon dioxid and oxygen, or the presence of harmfu expired organic products of respiration, have bee held responsible for the untoward consequences o living under conditions of poor ventilation. Drs. Le and Scott,[2] of the College of Physicians and Surgeon at Columbia University, have recently reported definit objective signs of physical inefficiency in individual subjected to an atmosphere of high humidity and high temperature. Measurements were made on the working capacity, that is, the total amount of work which excised muscles of animals are capable of doing before exhaustion sets in. The subjects were kept, to cite a specific illustration, at 21 C. (69.8 F.), with an approximate humidity of 54 per cent., in one case, and a 33 C. (91.4 F.), with a humidity of 89 per cent., in the other. The contrasts here quoted represent the distinctions between comfortable atmospheric conditions and the air of a hot, humid summer day. As an outcome there was a marked diminution in both the amount of work performed and the period of working power under the influence of high temperature and humidity. Under these conditions, furthermore, the body temperature also rose somewhat. The facts thus cited confirm by the unbiased testimony of direct experiment what the sensations and psychic responses of man have long since intimated.

THE SEX OF THE INSANE

Of approximately every five hundred persons in the United States in 1910, there was one an inmate of an insane asylum. The exact figures expressed in a recent report[3] state that in a typical community of 200,000 persons, equally divided as to sex, 208 of the males and 200 of the females would be found in the insane asylums. In the course of a year, 72 males and 60 females would be admitted to the asylums. In 1880 the total number of inmates in insane asylums in the United States included 20,635 males and 20,307 females. Thirty years later the number of male inmates had increased to 98,695, and the number of female inmates to 80,096. The excess of men among admissions in 1910 indicated a still further increase in the proportion, namely, 128 males to 100 females. An analysis of these admissions as to the specific forms of insanity involved brings to light the interesting fact that if alcoholic psychosis and general paralysis are deducted, the proportion of the sexes is practically the same. The diseases mentioned would seem to be those which, generally, are the result of dissipation. Alcohol and syphilis again established their superiority as man's most dangerous allied foes.

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[3] Summary of the Activities of the Public Health, Hospital, and Budget Committee of the New York Academy of Medicine for 1914.

[1] Ventilation, editorial, The Journal A. M. A., Nov. 7, 1914, p. 1672.

[2] Lee, F. S., and Scott, E. L.: On the Action of Temperature and Humidity on the Organism, Proc. Soc. Exper. Biol. and Med., 1914, xii, 10.

[3] Hill, Joseph A.: Report on the Insane in the United States, Bureau of the Census, Department of Commerce.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Fellowships in Medicine.—The Preston School of Industry, maintained by the state of California at Ione, Cal., has offered three fellowships of the annual value of $500, plus room and board at the Preston School, available for students of the University of California in medicine, social economics, applied psychology, law, political science or agriculture.

Popular Medical Lectures.—Stanford University Medical School has commenced a series of lectures in Lane Hall. The first lecture, on January 15, was by Dr. Ray Lyman Wilbur, on "Modern Medicine." On January 29, Dr. Wm. Palmer Lucas discussed "Feeble-Mindedness, Its Coincidences and Consequences." Succeeding lectures will be delivered by Dr. Leonard W. Ely, February 12, on "The Problem of the Crippled Child"; by Dr. William Fitch Cheney, February 26, on "Colds"; by Dr. Morton R. Gibbons, March 12, on "How the State Is Providing for the Injured Working Man," and by Dr. Emmett Rixford, March 26, on "Cancer."

New State Board Officers.—At the annual meeting of the State Board of Medical Examiners, held in Sacramento, January 12, the following officers were elected: Dr. Harry E. Alderson, San Francisco, president; Dr. William R. Molony, Los Angeles, vice-president; Dr. Charles B. Pinkham, San Francisco, secretary, and Dr. W. W. Vanderburg, San Francisco, treasurer. During the year 117 certificates to practice were granted, and three licenses were revoked. During the past eleven months 103 physicians passed the examination of the board, 45 failed, and through reciprocity with other states, 348 registered on presentation of credentials.

Personal.—Dr. George Herbert Evans, San Francisco, has been appointed assistant clinical professor of medicine, and Dr. Lewis Sayre Mace, instructor in medicine, in the University of California Medical School.——Dr. Arthur Beardslee has been appointed a member of the lunacy commission of San Francisco, succeeding Dr. Charles C. Wadsworth, deceased.——Dr. Albert Houston, San Mateo, has returned from abroad.——Dr. Francis S. Cook, Brentwood, fractured his right arm January 2, while cranking his automobile.——Dr. Frank L. Horne has resigned as cashier of the bank of Newcastle and will resume the practice of medicine.——Dr. Albert Maldonado, San Francisco, was struck by an automobile recently and sustained painful injuries.——Dr. Newton T. Enloe, Chico, is reported ill with pneumonia at his home.

ILLINOIS

Fenger Fellowship Assigned.—The Fenger Fellowship of $600 for 1915 has been assigned to Dr. George L. Mathers of the resident staff of the Cook County Hospital, Chicago, who will carry on work on certain bacteriologic problems in pneumonia.

Classification of Convicts by Mentality.—The warden of the State Penitentiary, Joliet, has called in consultation, Drs. George A. Zeller, Peoria; Eugene G. Cohn, Hospital, and H. Douglas Singer, director of the State Psychopathic Institute, and George Ordahl, state psychologist, to start plans for the installation of a psychopathic institute in the penitentiary. The plan as outlined deals with the segregation of prisoners according to their mentality. The four most important things to be taken up in connection with every prisoner, are heredity, eugenics, environment and opportunity in life.

The Work of the Visiting Nurses.—During the last fiscal year, the nurses of the Visiting Nurses' Association of Chicago, visited 31,000 individuals, each visit including trained service, instruction in sanitation and hygiene and in some cases financial aid. This work was accomplished with an expenditure of $95,536.77. The association has maintained an average of 71 trained nurses during the year, has sent three nurses abroad to aid in Red Cross work, has assisted other American cities in establishing visiting nurses' associations and has cooperated with many charitable and relief organizations.

INDIANA

Milk-Borne Disease in Gary.—Fifty cases of an unidentified disease believed to be due to infected milk were reported in Gary early in January.

Academy of Medicine Incorporated.—The Kokomo City Academy of Medicine has been incorported with a capital stock of $200. The directors are Drs. George D. Marshall, Lamar R. Knepple and William I. Scott.

Active Health Officer.—Dr. Simon J. Young, Valparaiso, health commissioner of Porter, has inaugurated free Wassermann tests for all who desire. These tests are made at the county laboratory, which is in charge of a full-time laboratory man. He has also planned for a child survey of the county to be conducted by the United States Public Health Service, which has agreed in the near future to detail officers for this work.

Disease Prevention Day to be Officially Recognized.—The following resolution was adopted by both houses of the Indiana Legislature and will undoubtedly be signed by the governor. It originated with the Indiana Society for the Prevention of Tuberculosis.

"WHEREAS: The state of Indiana loses upwards of 9,000 of its citizens each year besides suffering enormous losses from sickness through the prevalence of preventable diseases; and

WHEREAS: The monetary loss entailed thereby reaches into millions of dollars besides the load of human misery and suffering; therefore be it

Resolved by the senate, the house of representatives concurring, That the first Friday in October of each year shall be recognized as Disease Prevention day throughout the state of Indiana."

Personal.—Dr. Fletcher Landgon has opened a hospital in Winchester.——Dr. Walter A. Gekler, superintendent of the State Tuberculosis Sanatorium, Rockville, has resigned to accept the position of associate medical director of the Chicago Municipal Hospital.——Dr. Clarence A. Hartley, Evansville, has been elected president of the conference of secretaries of antituberculosis societies of the state.——Dr. Charles P. Cook has been elected vice-president of the Second National Bank of New Albany.——Dr. Anna I. McKamy, New Albany, has been reelected president of the Floyd County Anti-Tuberculosis Association.——Dr. and Mrs. Frederick C. Eckelman have donated to the city of Elkhart, a 20-foot plat of ground adjoining the new Municipal Building site.——Dr. Theodore Potter, Indianapolis, has been reelected vice-president of the Indiana Society for the Prevention of Tuberculosis.

Legislative Notes.—The Indiana Legislature has under consideration the following bills, some of which have been passed on favorably by one branch of the assembly:

First.—A bill providing that no tablets containing poison in such quantities as seriously to injure the consumer or endanger his life if taken in larger quantities than that prescribed as a dose, may be sold or otherwise dispensed in the state, unless they are V-shaped and coated with red.

Second.—A bill on the housing question designed to classify "disease traps" in a similar manner as "fire traps" provides that when the health authorities shall have knowledge that any dwelling or any part thereof is infected with contagious disease, they may order the place vacated.

Third.—A bill providing for sanitary drinking cups has been passed by the senate. Last year this bill was passed by both houses and vetoed by the governor.

Fourth.—A bill to provide pensions for widowed mothers with one or more children under the age of sixteen years and under this bill a board of child welfare is created for each county to consist of five members, the judge of the circuit court, the superintendent of the schools, the county health commissioner and the chairman of the board of county commissioners and one woman who shall be a mother appointed by the judge of the circuit court.

Fifth.—A eugenic bill has passed the senate that is made to apply to only male candidates for marriage, *requesting* only men to present certificates of their good health to the county clerk before the marriage license can be obtained.

MARYLAND

Hospital for Crippled Children Incorporated.—Incorporation papers of the Burman Hospital for Crippled Children, a charity planned for the relief of infants who, from accidents or other cause, are likely to become deformed for life, have been filed with the secretary of state. The hospital is non-sectarian and will be managed by a board of directors.

Personal.—Dr. Arthur P. Herring, secretary of the state lunacy commission, at the request of Governor Manning, is making an investigation regarding the care and treatment of the dependent insane throughout the state of South Carolina, and will report to the governor recommendations and suggestions for the better care and treatment of this class of dependents.——Dr. Samuel A. Nichols is said to be seriously ill at his home near Dayton.——Dr. Henry O. Reik is delivering a series of lectures on "Seeing Nearby America First," at the hall of the Medical and Chirurgical Faculty of Maryland, for the benefit of the faculty building fund.

Health Week.—From February 8 to 13 will be the annual "Health Week" in Baltimore and each evening there will be illustrated lectures by noted physicians. The public will be admitted free to all meetings. Motion pictures will be used to show the great fight in New Orleans against rats carrying the bubonic plague, the manner in which the common housefly manages to prey on human victims, and also tuberculosis films. There will also be an exhibit pertaining to public health work of blind persons and insane patients, the Public Athletic League, fraudulent medical advertisements and one of the latest and most powerful types of the pulmotor. The program mapped out for Health Week includes a number of very interesting events. On February 8 Governor Goldsborough and Dr. Harvey W. Wiley are to deliver addresses; on Tuesday addresses will be delivered by Dr. W. L. Rodman, president-elect of the American Medical Association, on "The Prevention of Cancer," and by Dr. J. C. Bloodgood on "Local Aspects of Cancer"; Wednesday, an address will be given by Dr. Arthur J. Cramp, of The Journal of the American Medical Association, on "Fakes and Frauds in Medicine," followed by a general discussion; on Thursday, Dr. W. M. Burdick, of the Public Athletic League, will speak on "Therapeutics of Play and Medical Hygiene of Childhood"; on Friday, the address will be by Dr. W. C. Rucker, on "Menaces of Bubonic Plague and the Vaccine," illustrated by slides taken in New Orleans, and on Saturday addresses will be delivered by Drs. L. L. Lumsden, N. R. Gorter and John H. Fulton. Moving pictures will be shown at each session.

MICHIGAN

Aid to Clinic.—The members of the Ingham County Medical Society have voted unanimously to give their services to the free clinic and dispensary, which has been established under the auspices of the Ingham County Nurses' Association.

Society Organized.—The Tri-County Society of Antrim, Charlevoix and Emmett counties was organized at Petoskey, January 14. Dr. Edwin R. Moorman, Pellston, is president, and Dr. George W. Nihart, Petoskey, secretary, of the society.

Free Antitoxin Provided by City of Marquette.—In response to a petition from physicians who urged that provision of free diphtheria antitoxin would be a financial saving to the city, the city council, December 3, made an appropriation for distribution of free antitoxin in certain cases.

Home of Wayne County Medical Society.—The new headquarters purchased by the Wayne County Medical Society contain in addition to the meeting place and committee rooms, club rooms, a library, with about 15,000 volumes, a reading room and nurses' central directory, and the Detroit Clinical Laboratory. The society has at present assets of about $70,000.

Volunteer Medical Service for Destitute.—Fifty physicians of Detroit, who are members of the board of commerce, have volunteered to donate their services free in destitute cases discovered by the board.——The Florence Crittenden Home has been placed at the disposal of the board for confinement cases.——The Michigan Workmen's Mutual Compensation Insurance Company has offered the services of its medical and legal staffs to the board for use in destitute cases.

Small-Pox.—According to Dr. John L. Burkart, secretary of the State Board of Health, in 1,681 out of the 1,995 cases of small-pox reported to the State Board of Health for 1913, there had been no vaccination. Of the entire number of patients, 28 had been vaccinated seven years before the attack, 64 more than seven years before, 143 had been vaccinated but the number of years before not given, and 55 had been vaccinated after exposure. Only three deaths occurred in the total number of cases and these were all among unvaccinated persons.

Personal.—Dr. U. G. Houck, United States inspector, who has been in charge of the Niles office of the Bureau of Animal Industry, since the beginning of the campaign against the foot-and-mouth disease there about the middle of October, has been ordered to go to Glendive, Mont., to organize the work there.——Dr. Athanase E. Gourdeau, Ishpeming, is under treatment in Augustana Hospital, Chicago, for malignant disease of the throat.——Dr. Dennis V. Smith, Ann Arbor, has started for Peking, China, where he will be stationed in a missionary hospital.——Dr. Orley M. Vaughan, Covert, has been elected president of the Citizens' State Bank of South Haven.——Dr. Joseph A. Crowell, Iron Mountain, has been appointed special inspector of the State Board of Health.——Dr. Charles M. Turrell has been appointed police surgeon of Detroit.——The office and residence of Dr. Lee H. Duguid, Custer, were destroyed by fire, January 1, with a loss of about $5,000.

MINNESOTA

New Health Bureau.—At the meeting for organization of the state legislative bureau, January 18, Dr. Cornelius Williams, St. Paul, was elected president, and Dr. H. W. Hill, Minneapolis, secretary.

Personal.—Dr. William G. Crumley, Rochester, has been appointed consulting intern in the American Red Cross Hospital, Paignton, Devonshire, England, and has started for his post of duty.——Dr. John C. Staley, St. Paul, has been appointed a member of the staff of the American Ambulance Hospital at Neuilly, near Paris.

Sanatorium Notes.—Representatives from the county boards of Fairmont, Watonwan, Nicolett, Brown, Martin, Waseca and Blue Earth met at Mankato, January 8, and discussed plans for the establishment of a joint county tuberculosis sanatorium. A committee consisting of one from each county was appointed to study the project and report at a later meeting.——A bill is to be presented at this session of the legislature asking adequate preparation for the care of all tuberculosis patients.——An appropriation of $750,000 is to be asked for to supply the state aid, which is necessary to enable counties to build and maintain their own sanatoriums, and to take care of patients at other municipal institutions.——Three counties are at present operating sanatoriums, and thirty-six counties have appointed county sanatorium commissions.

NEW YORK

Dinner to Staff.—Dr. J. Wilson Poucher, surgeon-in-chief of St. Francis Hospital, Poughkeepsie, gave a luncheon to the members of the staff of the hospital on January 12.

Medical Society Convention.—The one hundred and ninth annual meeting of the Medical Society of the State of New York will be held in Buffalo April 27 to 30. Dr. Albert T. Lytle, Buffalo, is chairman of the committee on arrangements.

Directors of Tuberculosis Preventorium Meet.—The annual meeting of the directors of the Tuberculosis Preventorium for Children was held recently, at which time Dr. Hemann M. Biggs was reelected president. It was announced that during the past five years 1,600 children had been cared for by the institution.

Tuberculosis Notes.—By a vote of sixteen to eleven the board of supervisors of Otsego County defeated a resolution to submit to vote at the next election a proposition to raise $20,000 for the establishment of a tuberculosis sanatorium.——Four farms have been sold and one has been rented to the Schenectady syndicate at Eminence. It is said that the property is to be used for a tuberculosis sanatorium.

Bill Abolishing Coroners Drafted.—A bill to do away with the coroner's office and to supplant it with a medical examiner's office has been prepared by Commissioner Wallenstein, and will be presented to the board of estimate after a conference with the City Club and other civic bodies. The bill provides for a chief medical examiner at a salary of $8,000 and assistants for each borough at $6,000. The only function to be performed by the medical examiners is to determine the cause of death. The performance of necropsies will be left to the judgment of the officials concerned in the detection of crime. The chief medical examiner and his assistants will be chosen from a civil service list after an examination is held, which will be open to any citizen of the United States.

Personal.—Dr. Frederick H. Flaherty of Syracuse has been appointed by the president, Dr. Grover W. Wende, to represent the Medical Society of the State of New York on medical education, and Dr. Francis E. Fronczak of Buffalo on public health at the conference on Health and Public Instruction of the American Medical Association in Chicago, February, 1915.——Dr. Isaac W. Brewer, Taughannock Falls, has been appointed district sanitary supervisor.——Lieut. Edward C. Clark, M. C., N. Y., N. G., has been transferred from the Sixty-Fifth to the Third Infantry.——Dr. Emerson B. Lambert has been elected president of the Port Jervis Telephone Company, Dr. Charles N. Skinner secretary-treasurer, and Drs. Frank E. Gessner, Emerson B. Lambert and Charles N. Knapp have been elected directors.——Dr. Frank E. Sweatt, Essex, has gone to the Plattsburg Hospital for treatment of heart disease.

New York City

Harvey Society Lecture.—The seventh lecture of the Harvey Society series at the New York Academy of Medicine January 30 is by Prof. Hans Zinsser of Columbia University on "The More Recent Developments in the Study of Anaphylactic Phenomena."

Small-Pox on Spanish Ship.—The health officer of the port of New York, on January 12, removed thirty-five steerage passengers from the steamship *Buenos Ayres* to Hoffman Island for observation and detention. A steerage passenger from Barcelona died from small-pox four days before the ship reached port.

Educational Work Among Midwives.—The Bureau of Child Hygiene of the Health Department, in cooperation with the Midwives' Association, has arranged a series of educational meetings for the midwives of the city. It is proposed to have these talks in German, Polish, Hungarian and Yiddish, by prominent physicians of the respective nationalities.

Personal.—Dr. William H. Park has offered his resignation as dean of the New York University Medical College because of the ruling of the Department of Health that its department heads shall not hold administrative positions elsewhere. Dr. Park is director of laboratories. He will retain his position as professor of bacteriology and hygiene in the college. His resignation will probably not take effect until the end of the college year.——Dr. Samuel Kutscher, who has been seriously ill with blood poisoning, is now reported to be improving.——A fire in the laboratory of Dr. Charles H. Stanley destroyed the fruit of fourteen years' research of the Roentgen ray.——Dr. A. P. H. Sage, a member of the staff of the Kings County Hospital, was operated on for appendicitis, December 24, and is reported convalescent.

Prevention of Unnecessary Blindness.—A campaign for the prevention of unnecessary blindness was recently inaugurated by a meeting at which a lecture on "Sight Saving" was delivered by Dr. Walter B. Weidler. A series of lectures has been arranged by the New York Association for the Blind, in collaboration with the American Medical Association, the Illuminating Engineering Society and the Board of Education. It is intended to extend the campaign to other cities. The undertaking is the result of the experience of the New York Association for the Blind, which has found that the ranks of the blind could be greatly decreased by convincing the public of the need of proper hygiene, proper economic conditions, good lighting, fresh air and exercise. Other lectures will be delivered at the Lighthouse for the Blind on East Fifty-Ninth Street on February 1 and 15 and on March 1 and 15. The speakers will be Dr. Lewis W. Crigler, Dr. Ellice M. Alger, L. B. Marks and Miss Winfred Holt.

PENNSYLVANIA

List of Approved Hospitals.—The Bureau of Medical Education and Licensure has prepared a tentative list of ninety-five hospitals in the state which are approved for internships. The bureau requires that each applicant for license in the state hereafter must have served an internship in an approved hospital.

Personal.—Dr. Theodore L. Hazlett, Pittsburgh, sailed for Europe, December 19, en route to Petrograd, via Archangel, to join the American Red Cross unit on duty with the Russian army.——Dr. Benjamin J. Millard, Mt. Carmel, who has been under treatment at the State Hospital, Fountain Springs, on account of a fractured hip, is reported to be convalescent.——Dr. Edwin B. Marshall, Annville, has been appointed resident physician of the Lebanon Sanatorium.——Dr. Harry Somerville, Chest Springs, cut his arm severely while cutting ice on a pond near his home.——Dr. George W. Mellon, Philadelphia, has started for Europe in charge of insane and mentally deficient immigrants being returned to Switzerland. At the completion of this mission, he will join the American Red Cross in France.——Dr. Samuel C. Jaspan, formerly assistant physician at the Mt. Alto State Sanitarium of the Pennsylvania Department of Health, has resigned and entered practice at Trenton, N. J.——Dr. Charles E. Helm, Bart, had a narrow escape from drowning while crossing a flooded creek at Hoovers Lane.——Dr. John M. Sheedy, Altoona, sustained a comminuted fracture of the left arm, by a fall on a slippery pavement, January 5.

Philadelphia

Gross Lecture.—The annual Samuel D. Gross lecture was delivered at the Jefferson Hospital by J. Chalmers Da Costa, professor of surgery at the Jefferson Medical College.

Contracts Awarded.—The contracts for the construction of a new observation building and a nurses' home at the Philadelphia Hospital for Contagious Diseases, were awarded January 15 for $68,924 and $51,890, respectively.

Gorgas Honored.—Brig.-Gen. William C. Gorgas, Surgeon-General, U. S. Army, was tendered a reception and dinner, January 15, at the University Club, by members of the Sewanee Alumni Association.

Personal.—Dr. Albert P. Brubaker has been reelected president of the Society for Ethical Culture.——Dr. Francis D. Patterson was elected president of the Philadelphia Safety Council January 19.——Dr. E. Kilbourne Tullidge, who sailed for Europe December 8, has been made a member of the medical staff of the Red Cross Hospital, Vienna.

TENNESSEE

Outbreak of Spinal Meningitis.—Cases of spinal meningitis, with three deaths, are reported from the northern part of Rutherford County.

Organization of Medical Inspectors of Schools.—A corps of medical inspectors for the public school of Knoxville was organized on January 12, and assignment of inspectors to schools and appointment of a board of consulting specialists were made.

Personal.—Fire in a bank in the Bank of Commerce & Trust Company's Building, Memphis, January 11, damaged the offices of Drs. James B. McElroy and Hugh B. Kincaid.——Dr. S. M. Covington, College Grove, was stabbed on December 24 by an escaped patient from the Central Hospital for the Insane,-Nashville, but his injuries are believed not to be serious.

Vaccination Urged on Citizens.—The occurrence in various places of small-pox has caused vaccination to be urged and very generally practiced throughout the state. According to Dr. R. Q. Lillard, secretary of the State Board of Health, the disease has assumed a very malignant form in certain sections. For several years the type of small-pox encountered has been very mild. In Shelby County more than 3,000 patients have been treated during the past nine years without a single death.

TEXAS

Personal.—Dr. Addeson L. Lincecum, El Campo, has been appointed assistant state health officer.——Dr. John W. Kuykendall, Fort Worth, who was injured in a collision between his automobile and a street car, January 16, is reported to be improving.——Dr. William M. Shytles, Venus, has been appointed a member of the staff of the State Hospital, Terrell.——Dr. Henry F. Lewis, Nugent, sustained serious injuries in a machinery accident, January 11, and is under treatment in a sanatorium in Abilene.——Dr. Roy D. Wilson, Houston, has been elected medical director of the Bankers' Health and Accident Insurance Company.——Dr. George M. Graham, Austin, has been appointed state bacteriologist.——Dr. Murff F. Bledsoe has been elected chairman of the Port Arthur Branch of the Texas Public Health Association.

Review of Health Work.—The report of the State Health Department made by Dr. Ralph Steiner, Austin, reports the following achievements during the present administration: four new gasoline launches added to the quarantine branch of the service and the quarantine station at Aransas Pass repaired and made habitable; sanitary code enacted into law; state sanatorium for the care and treatment of consumptives erected at Carlsbad at approximate cost of $100,000; diphtheria antitoxin, antimeningitis serum and vaccine distributed at nominal prices; establishment of bacteriologic laboratory; manufacture and free distribution of antityphoid vaccine; abolition of common drinking cup in railway trains and stations; inauguration of a hookworm campaign carried out in forty-four counties with over 65,000 microscopic examinations and over 17,000 treatments given.

CANADA

Small=Pox Among Indians.—Small-pox is very prevalent on the Indian Reservation near Brantford, Ontario. The Ontario Board of Health is cooperating with the Indian Department at Ottawa, and Dr. R. W. Bell of the former board has made a special investigation into the outbreak. He found that the disease had been lurking on the reservation for two or three years, and advises a general vaccination. There have been about sixty cases.

Personal.—Dr. Robert W. Shaw, London, Ontario, has been elected chairman of the Board of Education of that city for 1915.——Sir William Osler has offered his services in connection with the McGill Base Hospital, composed of members of the faculty of medicine, students and nurses from Montreal hospitals, which will leave for the front in the spring. He will join the unit as a supernumerary colonel.——Dr. Henry R. Casgrain, Windsor, Ontario, past president of the Ontario Medical Association, is going to the front, having been appointed to command one of the field hospitals of the second Canadian contingent.——Dr. Henry Howitt, Guelph, Ontario, is spending four months at the Floronton, St. Petersburg, Fla.

Hospital News.—Representatives of the several hospitals in Toronto waited recently on the Hon. W. J. Hanna, provincial secretary, asking that the government would allow them 10 cents per treatment for each outdoor patient. On the figures submitted this would mean an increased grant of $5,000. The minister pointed out that the present was no time to warrant unnecessary increase of the hospital grants. Later on, however, the matter would be considered by the government.——The Royal Victoria Hospital, Montreal, started the present year with an increase in the cost of maintenance, but with fewer patients; it also began with a slight balance to the good, due to the sum of $500,000 left by the late Lord Strathcona. The cost of each patient was $2.20 per day, 12 cents more than in the previous year. Plans for a new pavilion for private patients donated by Mr. J. K. L. Ross in memory of his father, the late Mr. James Ross, were approved.

Canada and the Wounded.—There are 160 Canadian doctors and 103 Canadian nurses serving the allied forces in various ways. There are twenty Canadian nurses and sixteen medical men in the military hospital at Boulogne. Col. Charles Hodgetts, Canadian Red Cross Commissioner in England, states that the Canadian Red Cross Society has contributed $75,000 in cash and paid for twelve motor ambulances as a gift to the British Red Cross Society, in addition to numerous donations of blankets, etc. Col. Lorne Drum of the Canadian Army Medical Corps is in charge of the military hospital under the war office at Hempstead, the Mount Vernon Hospital. The Queen's Canadian Hospital, Shorncliffe, England, is in charge of Dr. Donald Armour and Sir William Osler; the nurses are all Canadians. The Duchess of Connaught Canadian Red Cross Hospital, Cliveden, England, is in charge of Major Gorrell, Ottawa, Canada, and the staff of surgeons and nurses will be supplied by the Canadian army medical corps. There are twelve contingent hospitals on Salisbury Plain, and Major Murday MacLaren, St. John, N. B., is in charge of the chief one. Lieutenant-Colonel Shillington, Ottawa, is in charge of the Hospital Le Touquet, France. Hon. Philippe Roy, Canadian commissioner in Paris, is in charge of the Military Hospital at Dinard, France.——Lieut.-Col. Carleton Jones, chief of the Canadian Army Medical Services, reports that the outbreak of cerebrospinal meningitis in the Canadian troops on Salisbury Plain is now under control. There have been about twenty deaths from this disease.

GENERAL

Tropical Medical Specialists to Meet.—The American Society of Tropical Medicine will hold its twelfth annual meeting at San Francisco, June 14 to 16.

Bacteriologists Elect.—At the annual meeting of the Society of American Bacteriologists held in Philadelphia, December 29 to 31, the following officers were elected: president, D. H. Burgey; vice-president, John Weinzirl; secretary-treasurer, A. Parker Hitchens, Glen Olden, and delegate to the American Association for the Advancement of Science, Dr. Milton J. Rosenau, Boston. The next regular meeting of the society will be held at the University of Illinois, Urbana, but during the summer a special meeting will be held in San Francisco.

Examination of Army Dentists.—The Surgeon-General of the Army announces that examinations for the appointment of acting dental surgeons will be held at Fort Slocum, N. Y.; Columbus Barracks, Ohio; Jefferson Barracks, Mo.; Fort Logan, Colo., and Fort McDowell, Cal., on April 12. Appli- cation blanks and full information can be procured by addressing the "Surgeon-General, U. S. Army, Washington, D. C." Applicants must be citizens of the United States, be between 21 and 27 years of age, graduates of a dental school legally authorized to confer the degree of D.D.S., and be of good moral character and habits. There are nine vacancies to be filled.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian, St. Luke's German and Roosevelt hospitals, New York City, each about $75,000 by the will of Henry Miller.

The Detroit Tuberculosis Sanitarium, $1,400, the proceeds of a charity ball, November 27.

Dr. F. Le Roy Satterlee, New York City, about $120,000 by the will of Harriet Wells Smith.

Provident Hospital, Chicago, and Oak Park Hospital, each $1,000 by the will of Adeline Freer Sharpe, Oak Park.

Aid Association of the Philadelphia County Medical Society $1,000, an anonymous donation.

Southern Medical Society of Schuylkill County, Pa., a hospital to cost $25,000, to become the property of the society at the death of the donor, by Dr. George K. Binkley, Orwigsburg.

The American Red Cross and Non-Combatants.—At the last annual meeting of the general board of the American Red Cross, at which President Wilson presided and made an address, a resolution was passed that the American Red Cross would not solicit relief for non-combatants in the European war zone, preferring to have such relief given through different national organizations or committees. It will, however, so far as practicable and proper, act as intermediary in transmitting such relief, provided the donors designate the particular country or nation for which this relief is intended. Being a neutral organization, the American Red Cross could not undertake the distribution of such relief, nor undertake its division between different countries or nations. Miss Boardman of the Red Cross expressed the hope that under some revision of the Treaty of Geneva the Red Cross of neutral countries in the future would be enabled to carry on relief work for non-combatants under war conditions.

FOREIGN

Another French Exchange Resumes Publication.—The *Archives des Maladies du Cœur, des Vaisseaux et du Sang,* which has been suspended since the August number, has resumed publication. The publishers announce that it will appear regularly henceforth. Professor Vaquez is the chief of the editorial staff and J. Heitz the general manager. This monthly, devoted exclusively to the heart, vessels and blood, is now in its eighth volume.

WAR NOTES

Aid for Belgian Physicians.—A committee has been organized in Denmark to receive contributions for the aid of the Belgian profession, and the *Ugeskrift for Læger* publishes the list of contributors each week. The second list, January 7, cites nineteen contributors, the sums ranging from 5 to 50 crowns, about $1.35 to $13.50.

Typhus Among Russian Prisoners in Germany.—The *Deutsche medizinische Wochenschrift* states, January 1, that one of the attending physicians and an orderly have contracted exanthematous typhus in tending the Russian prisoners in the prison camp at Cottbus. There are several hundred cases among the prisoners and nine have died according to this journal.

Supply of Drugs in Russia.—According to the *Apotheker-Zeitung,* Russia has always imported nearly all the drugs used There are only a few manufacturing chemists and their output is small; chloroform, for example, has not hitherto been made anywhere in Russia, nor iodin. A scientific expedition has recently been sent to the gulf between Lapland and Archangel, in the north, to investigate algae growing there, with a view to produce iodin from them, and also from the salt in the district, which is said to contain iodin. Arrangements have also been made for the production of chloroform at Moscow.

Scientific Societies Adopt Peace Resolution.—The Federation of American Societies for Experimental Biology, comprising the following societies: Physiological Society, Society of Biological Chemists, Society of Pharmacology and Experimental Therapeutics and the Society for Experimental Pathology; the presiding officers of which are, respectively, Walter B. Cannon, Graham Lusk, Torald Sollman and Richard M. Pearce, at the annual meeting held at St. Louis, December 20, unanimously adopted the following preamble and resolution:

"Whereas: Various of the European nations with which many of our members are related by birth, descent, or intellectual friendship are now at war;

"*Resolved*, That we extend to the scientific men within these nations the hope of an early and enduring peace, which will leave the nations with no permanent cause of rancor towards each other, and which will insure to each the glories of scientific and humanitarian achievement in accordance with its own conception of these ideals."

Aid for Belgian Physicians.—Dr. F. F. Simpson, treasurer of the committee of American physicians for the aid of the Belgian profession, announces that for the week ending Jan. 23, 1915, the following contributions have been received:

Dr. W. A. Coventry, Duluth Minn.		$ 10.00
Dr. A. William Reggio, Boston, Mass.		25.00
Dr. Edward B. Heckel, Pittsburgh, Pa.		25.00
Dr. T. R. Williams, Puxsutawney, Pa.		10.00
Dr. J. Knox Simpson, Jacksonville, Fla.		10.00
Sonoma Co. Medical Society, Sebastopol, Cal.		50.00
Anonymous—E, Pittsburgh, Pa.		10.00
Dr. A. B. Hirsh, Philadelphia, Pa.		5.00
Dr. Henry Eastman, Pittsburgh, Pa.		10.00
Dr. H. S. Steensland, Syracuse, N. Y.		2.00
Washington Co. Medical Soc., Marietta, Ohio		25.00
Dr. Lewis S. Pilcher, Brooklyn, N. Y.		25.00
Dr. M. Iverson, Stoughton, Wis.		5.00
Dr. A. H. Traver, Albany, N. Y.		5.00
Dr. Carl B. Drake, St. Paul, Minn.		5.00
Dr. Leonard Freeman, Denver, Colo.		5.00
Dr. Howard C. Taylor, New York, N. Y.		25.00
Dr. Walter F. Donaldson, Pittsburgh, Pa.		5.00
Deer Lodge Co. Medical Soc., Anaconda, Mont.		75.00
Dr. W. S. Zimmerman, Spartansburg, S. C.		10.00
Dr. H. MacVicker Smith, Pittsburgh, Pa.		5.00
Dr. Ethel D. Brown, New York, N. Y.		5.00
Dr. Brown Pusey, Chicago, Ill.		25.00
Total		$ 377.00
Previously reported receipts		1,414.00
Total receipts		$1,791.00
Previously reported disbursements	$990.00	
Disbursements week ending Jan. 23	660.00	
Total disbursements		$1,650.00
Balance		$141.00

Diplomatic arrangements have just been completed whereby drugs and instruments for civilian physicians may be sent into Belgium. Recent advices from Dr. Herbert Spencer of London show that our Belgian colleagues are literally starving. Three hundred additional boxes of food have been purchased at a cost of $660. Checks for this fund should be sent to F. F. Simpson, treasurer, Pittsburgh.

Ambulance Construction Commission.—At the instance of Mr. Henry S. Wellcome, the founder of the Wellcome Bureau of Scientific Research, a commission has been formed to standardize the patterns and improve the type of field motor ambulances. Sir Frederick Treves, whose long experience and distinguished service specially fit him for the task, has consented to be the chairman. The admiralty is represented by the director-general of the medical department, R. N., while the quartermaster general to the forces and the Acting director-general, Army Medical Service, represent the war office. The British Red Cross Society is, of course, represented by Sir Frederick Treves, and the St. John Ambulance Association by Sir Claude Macdonald and Sir John Furley. The remaining members are all experts. This commission will first and foremost act as a judging committee for the award of prizes of the value of $10,000 provided by the Wellcome Bureau of Scientific Research. These prizes are offered for the best designs of an ambulance body which shall fit a standard pattern motor chassis for field motor ambulances. The last day for the receipt of competing designs is June 30, 1915. It is hoped that the competition will bring in a number of ingenious designs, from which the ideal field ambulance body will be evolved. It may be asked why the competition is restricted to designs for a body and not for the complete ambulance, including a chassis. The reason is that a chassis takes much longer to build than a body, and that, when war breaks out, it is impossible to get at short notice anything like a sufficient number of any one type of chassis. On the other hand, a standardized body to fit any chassis of approved dimensions can be constructed in numbers at comparatively short notice, and a perfected body is needed to insure complete comfort for the wounded. It is hoped that the information obtained by the competition, and in other ways, will be published in some permanent form, available for future reference. Probably in addition to one design of special excellence, there will be submitted various suggestions which may be incorporated in the pattern design approved by the commission. For these a portion of the prize money has been set apart. The first prize is of $5,000, the second $2,500 and the third of $1,500. All details of conditions may be obtained from the secretary, the Ambulance Construction Commission, 10 Henrietta Street, Cavendish Square, London, W. England. The competition is open to citizens of all nations.

LONDON LETTER

LONDON, Jan. 15, 1915.

The War

THE HEALTH OF THE TROOPS AT THE FRONT

So far the amount of disease among the troops at the front has been very small, and the two zymotic diseases most to be feared have given little trouble. Dysentery has been absent, and the incidence of typhoid fever has been much below an annual rate of 2 per thousand. The case mortality has been little over 8 per cent. Great vigilance is displayed by the medical officers in promptly isolating suspected cases. The value of antityphoid inoculation is shown by the following results: The men brought into the field fall into three classes: (1) "fully protected" men, those who have received two doses of Wright's antityphoid serum within the last two years; (2) "partly protected" men, those who have not been inoculated within the past two years, or who have received only one dose, and (3) "unprotected" men, those who have never been inoculated. It is among the latter class that all the deaths hitherto recorded have occurred. Furthermore, this class has supplied about sixteen times as many cases as the fully protected class, and about six times as many cases as the partly protected. Arrangements have been made for the isolation of infectious diseases at all the British base hospitals, and an institution specially for this purpose is maintained near Boulogne. It consists of a three-story stone building on the edge of a sandy beach, and about 100 bathing huts. The building is used entirely for typhoid cases, the huts for other infectious diseases. In England provision has also been made for the care of soldiers brought home with infectious diseases. It is generations since British troops fought so near home, and the small number of home camps in times of peace have not required special military fever hospitals. Hospital accommodation has been provided for 150 acute infectious cases at a country house. In order to reduce the danger from convalescent carriers, the hut system is being installed on a scale which allows a large number of convalescents to be kept under observation, if the necessity should arise.

HOSPITAL ACCOMMODATION FOR THE INDIAN WOUNDED IN ENGLAND

The peculiar difficulties attending the care of the Indian wounded from our expeditionary force, such as language, caste, and the religious customs with regard to diet, have rendered special provision necessary not only at the front but also in England. At the fashionable and salubrious watering place of Brighton, accommodation has been provided for 3,000 wounded Indians. The general hospital for Indian troops will be located in three main blocks consisting of the Corn Exchange lent by the corporation, a school lent by the educational authority, and the Brighton Union, lent by the guardians. In addition to a large staff drawn from the medical service of the Indian army, an Indian physician and a senior Indian medical student have been appointed for each fifty beds. The sanitary arrangements have been carried out to suit the necessities and habits of the Indians. Thus the baths are all shower baths. The closets are stand-up water closets. The language difficulty has been overcome. The medical officers practically all speak the dialects; many Indian medical physicians and students are engaged, and the patients can often speak a little English. Notices are posted up in Urdu and Nagari. The cooking of the food presents special difficulties. There are two sets of cooking arrangements in each hospital, one for the Hindus and the other for the Mussulmans. The Ghurkas and Sikhs join the former. The utensils, etc., are kept strictly separate. The dietary is not very elaborate. Chupatties, which are made of plain flour and water, by hand on an iron plate, are a favorite food. When they have to a certain extent set, they are tossed from side to side by the cook, in pancake fashion. Other articles of consumption are curry and rice. The strict Mohammedans do not touch alcohol.

THE AUSTRALIAN MEDICAL SERVICE

The Australian expeditionary force which was sent to England to complete its training has been detained in Egypt because of the threatened invasion of that country by the Turks. It has an excellent medical service organized so as to correspond as near as practicable with the organization laid down for the imperial services, thereby enabling the Australian units at once to take their place side by side with the medical services in any part of the British Empire. At the outbreak of the war, three field ambulances and one light horse field ambulance (the latter corresponding to a cavalry field ambulance) were mobilized on war establishment, complete in every detail as to personnel, equipment, vehicles and horses. Almost simultaneously with this, the medical service required for lines of communication was also set going, comprising one clearing hospital, two stationary hospitals and two general hospitals. An additional light horse field ambulance and field ambulance were also mobilized. All these units correspond as regards personnel, equipment, nursing staff and accommodation for patients with those laid down for the imperial services. The complete units will afford accommodation for over 2,000 patients. The personnel is drawn not only from medical officers on the active list but also from those on what is known as the Australian Army Medical Corps Reserve. Every state has sent in its quota, the general principle being that each unit will be complete in its equipment and transport.

THE EFFECTS ON CIVIL PRACTICE

In my last letter I mentioned certain suggestions which had been made to the war office and accepted by it to prevent some of the difficulties arising from the dislocation of civil practice in consequence of physicians undertaking military duties. Some further methods were mentioned at a meeting of physicians in Glasgow by Dr. Norman Walker, who delivered an address on the work of the Scottish Medical Service Emergency Committee. This committee was constituted at the outbreak of the war, and consists of the heads of the Scottish medical schools, with certain representative physicians. It has issued a memorandum of which he discussed and explained the following points: It is held that the fee offered to a locum tenens taking the work of a physician engaged in military duty should not exceed $21 a week. Retired physicians willing to enable their brethren to serve their country were asked to send their names to the committee, and a good many names were thus obtained. A difficulty arose in that it was not easy for a physician in the neighborhood of 60 to face a hard country or colliery practice. Some had heroically undertaken work which would tax their strength. On the other hand, there are districts in which the majority of the work is done in the consulting room and can easily be performed by older men. A suggestion was made to school authorities that their whole-time medical officers should be allowed to give part of their time to general work. A fourth suggestion is that the visiting staffs of large hospitals, infirmaries and asylums should consent to a reduction of the number of medical residents and clinical assistants, and undertake a portion of the work assigned to these. This has been carried out. All hospitals have cut down their resident staffs. A distinguished professor of medicine is acting as his own house surgeon, and a well-known professor of anatomy has acted as a house surgeon in the hospital attached to his school. A fifth suggestion is that in the larger towns, young physicians whose practices are yet small should in pairs make an arrangement whereby one undertook the whole town practice for a period, while the other acted in the country for a colleague absent on duty. Women in the position of locum tenens had proved useful, though at first their offers were not received with enthusiasm. However, once the novelty wore off their services were appreciated.

THE DECLINE IN THE NUMBER OF MEDICAL STUDENTS AT SCHOOLS

The shortage of medical students attending the schools in consequence of so many having gone to the front as dressers, or in the fighting line, has given rise, as pointed out in previous letters, to serious anxiety as to the supply of physicians in the future. The army authorities have taken the view that the best thing a medical student, who desires to serve his country, can do is to complete his studies and qualify as soon as possible. Accordingly, an army order has been issued giving permission to any student who has gone to the front to return home to complete his studies, if he desires to do so. Owing to the impossibility of obtaining resident medical officers in the hospitals, senior students are being employed in some cases in their places.

THE RELIEF OF BELGIAN DOCTORS AND PHARMACISTS

The fund organized by the profession for the relief of Belgian physicians and pharmacists, both those remaining in their own country and those who are refugees in England, is receiving wide and generous support from the profession. An executive committee has been formed, and a general committee is in course of formation which is of the most representative character. It includes the presidents of the colleges of physicians and surgeons and of the Royal Society of Medicine, the General Medical Council and the provincial colleges, the chairman of the Council of the British Medical Association, the professors of medicine at the universities and the editors of the *Lancet* and *British Medical Journal*. It is recognized that while the German occupation lasts, it will not be possible to do more for the doctors and pharmacists remaining in Belgium than to dispatch certain packets of medical material with which the misery may be relieved. A start has been made in this direction, and packets will be sent regularly when it is known that they can reach their destinations without interference. The government has issued an order giving the holders of the medical diplomas of Belgian universities the right to practice in this country during the war.

BRITISH PHYSICIANS EXAMINED IN MEDICINE FOR THEIR LIVES

Two civilian physicians attached to the British Red Cross for the first Belgian unit have arrived in London from Germany after an extraordinary experience. Early in August they passed through Namur in order to form a hospital for the Belgians nearer the frontier. They were captured by the advancing Germans, who accused them of being spies, and were sent to Cologne, where they were thrown into a military prison and kept in solitary confinement for fifteen days. Not only were they closely cross-examined in the ordinary manner and told they were on trial for their lives, but also they were put through a medical examination by the chief medical officer of the command. They were asked many questions which no layman could answer, such as the symptoms of pneumonia and typhoid fever and their bacteriology, anatomic questions on the leg, and what organs would be perforated if the abdomen was pierced by a bayonet. They were not told whether the German medical officer regarded their standard of knowledge as good, but they must have "passed," as they were eventually released.

THE MANUFACTURE OF THYMOL

Hitherto the antiseptic thymol has been almost entirely manufactured in Germany, although the ajowan seeds, which are almost the sole source of the oil from which thymol is produced, are grown on a large scale only in India. The cutting off of the supplies of thymol from Germany has increased the price eightfold, and it is even now $5 a pound, as against $1.25 before the war. As the manufacturing process is quite simple, preparations are now being made to produce the drug in this country. Fortunately also a British possession provides a substitute for thymol if required. This is carvacrol, obtained from oils derived from a variety of plants, but particularly from the origanum of Cyprus.

INOCULATION AGAINST TYPHOID FEVER

Notwithstanding the great value of inoculation against typhoid fever of the soldiers going to the front, the antivivisection and antivaccination fanatics are carrying on an active campaign against it. As inoculation is not compulsory, this campaign is mischievous. Sir William Osler has issued in the lay press a strong appeal to soldiers, telling them they are leaving their homes in defense of principles for which their fathers fought and died. He says it is their duty to preserve their health, and that diseases are more fatal than powder and shot. More than half the mortality in the wars of the nineteenth century was due to preventable diseases such as typhus, typhoid, cholera, malaria and dysentery. In the South African War more soldiers died from typhoid than from wounds. The disease is prevalent in parts of northwest France and Belgium. The efficiency of vaccination against typhoid has been proved, and it is followed by slight illness, rarely by anything more serious. Among 22,000 Canadian soldiers vaccinated in this country, only twenty-two had symptoms other than the usual malaise and headache.

Excessive Sickness Claims Under the National Insurance Act

Considerable dissatisfaction with the working of the national insurance act has been expressed by friendly societies in consequence of excessive claims for illness. An official inquiry has been held, and a report made, in which it is stated that many of the physicians, having had no previous experience, do not correctly apprehend the nature of their task, the value to be placed on their certificates, the relation in which they should stand to the society, or their responsibility to the working of the whole machine. Others who have acted in the past as friendly society physicians no longer consider themselves bound to look after the interests of the societies. (*To understand this, it must be borne in mind that the national insurance act removed physicians from all control by friendly societies who no longer appoint them.*

They are simply chosen individually by the members.) As their remuneration depends on the number of panel patients they have, it is alleged that the fear of giving offense induces them to grant certificates for trivial illnesses, and to continue them after the incapacity has ceased. The committee, however, adds that there has been little evidence of definite acts of deliberate false certification. The insurance of women was a comparatively new experience under the act, and the claims for sickness so exceeded the actuarial calculation that the government had to make a special grant. The committee finds that the causes for this excess are: (1) the widespread ignorance among women of what is involved in insurance, leading them to feel that they are losing something if they do not get out more than they have paid in; (2) the large proportion of ill-paid and ill-fed women; (3) the fact that the sickness benefit is often equal to or more than the woman's earnings when working; (4) the great difficulty of supervising their behavior during sickness so that it is possible for them to do ordinary housework, or even extraordinary housework, while they are supposed to be incapable of work; (5) the loss of wages by women, generally less serious than in the case of men, and (6) illness accompanying pregnancy. Beyond these contributory causes for the excessive claims by women, the committee is convinced that the main cause of the excess is that the incidence of sickness among women employed in industrial occupations is much heavier than was anticipated, or than could have been calculated when the actuarial estimate was made. In many cases the excessive predisposition to disease arose from conditions of past childbearing, but the evidence fully substantiates the view that "experience exceeds the provision made under the act." The committee suggests as a remedy the employment of women in administering women's societies. The committee thinks that immediate steps need to be taken to produce a firm attitude by the profession with regard to improper claims for sickness. They approve the appointment of medical referees, who should be whole time officials, so that there would be no danger that practice of a panel physician or a private physician would conflict with their duties. They would be of value when a panel physician was in a state of honest doubt and desired a second opinion, and also because of the hesitation of panel physicians to declare persons able to work for fear of financial loss. The report is one more example of the dangers of socialistic schemes, however beneficently designed. The ideal of Mr. Lloyd-George that every worker should be insured against the cost of illness was a fine one, but he knew little of the technical difficulties of his gigantic scheme. A national fund into which every one can put his hand is a standing temptation to abuses. The motive which individual loss provides against waste is removed. Under the friendly societies in the past, the members exercised a check against the robbery of their funds. The societies still control the funds, but with so much state interefernce and the loss of control over physicians, their power is less and their interest is weakened.

New Radium Laboratories at Manchester

Until recently there was in this country only one establishment devoted to radium therapy, the London Radium Institute. Now, in consequence of public subscription, radium laboratories have been opened at the Manchester Infirmary which contain radium to the value of $100,000. There is accommodation for the treatment of fifteen patients a day.

The Scarcity of Physicians

The scarcity of physicians created by the war is illustrated by the statement of the secretary of the Wolverhampton General Hospital, at a meeting of the committee. He could well remember the time when it was quite a common thing, when they advertised for a house surgeon or physician, to receive from ten to twenty applications for one post. Things gradually became worse, however, until, advertise as they would, they absolutely failed to get any applications for the post vacant. He was sent off to London and visited nine of the leading medical schools, and the result was that after extreme difficulty the resident post was filled. As soon as it was known that medical officers were wanted in the army and navy, all the resident medical staff volunteered. On two occasions it had been impossible for members of the honorary staff to see all the outpatients. He had gone to London again, and did the round of the medical schools. He could not find a single man who wanted employment as a doctor, and theirs was not the only hospital in such a position. They had had to fall back on medical women. But though obtainable, they too were scarce. Their resident staff now consists of one man and three women.

PARIS LETTER

PARIS, Jan. 7, 1915.

The War

INFORMATION ON THE SURGERY OF WAR

The present war is bound to furnish a rich harvest of interesting and instructive reports on the wounds of war. Such matters are beginning to be reported and discussed before the scientific societies of Paris, especially the Académie des sciences, the Académie de médecine and the Société de chirurgie. In my letters I shall endeavor to summarize the most interesting of these papers for the readers of THE JOURNAL. Moreover, in some provincial centers there is also scientific activity which deserves to be reported. Thus in one of the temporary hospitals of Bordeaux, directed by Dr. Pousson, clinical professor of diseases of the urinary tract at the Faculté de médecine of that city, the physicians on the staff of the hospital have recently organized to hold weekly scientific meetings at which the results of their work will be reported. The proceedings will be published in a bulletin. Among the subjects already treated are vascular surgery, cerebral surgery and genito-urinary surgery.

TRANSMISSION TO THEIR FAMILIES OF NEWS OF WOUNDED SOLDIERS

At the beginning of the war, there was much complaint from the public because of the lack of news concerning the wounded. At present, things have been completely changed (THE JOURNAL, Dec. 19, 1914, p. 2242). The war department's very practical arrangements for this purpose deserve to be known. Suppose for instance, that a number of wounded men have just arrived at a base hospital. The physician in charge examines the wounds and, if necessary, verifies, completes and rectifies the diagnosis made at the point where the wounded man received his first treatment. This diagnosis, made on the same tag which indicates whether or not the patient has received tetanus antitoxin, is pinned on the wounded man's cap. The same day the physician fills out a special postal-card for each patient. These cards are of different color from ordinary postal-cards; on one side they bear, along with the address of the family, the name of the wounded man and that of the hospital where he is being cared for. The other side of the card is divided into two parts one of which is reserved for the wishes expressed by the patient and may be filled out by himself personally. The other is to be filled out and signed by the physician with indication of the character of the disease or wound. Each week thereafter, a postal-card is sent to keep the family constantly informed of the patient's condition. This bulletin of health is to be sent with the consent of the patient and to the person designated by him. This postal-card service evidently represents a sometimes considerable increase of work for the physician, but this is justified by the results.

THE ACTIVITY OF THE SOCIETY FOR AIDING THE WOUNDED

The oldest of our three Red Cross societies, the Société de secours aux blessés militaires, has just published some figures summarizing its work since the beginning of hostilities. In the region of the east, the society has organized 93 first-aid stations, 83 railway-station infirmaries and 35 canteens. It has since organized 771 auxiliary hospitals containing to-day 56,579 beds. More than 9,000 nurses are employed in the hospitals of the society, and 600 others are at the disposition of the health service in the military hospitals. The society has made numerous gifts of linen and wool clothing for the hospitals or for the soldiers at the front. From Paris alone it has sent out over 100,000 such articles as blankets, shirts and socks. These various services have occasioned large expenditures amounting to 8,520,000 francs ($1,704,000) distributed as follows: hospitals, 6,840,000 francs; railway-station infirmaries, 980,000 francs; first-aid stations, 93,000 francs; canteens, 77,000 francs; automobile ambulances, 105,000 francs; gifts to hospitals and soldiers, 425,000 francs.

ASSISTANCE FOR CRIPPLES

For a long time there has been in France an Association pour l'assistance des mutilés pauvres. It was founded in 1868 to furnish needy cripples with assistance and employment. In view of the recent events which have increased the numbers of prospective beneficiaries, the society has addressed to the public and particularly to employers, merchants, manufacturers' bankers, etc., an appeal for report of employments which might be given to men incapacitated by war injuries.

BERLIN LETTER

Berlin, Dec. 29, 1914.

Personal

Von Hansemann and F. Krause have been appointed regular salaried professors.

Professor Aschoff has been chosen rector of the University of Freiburg.

The War

SEXUAL PROBLEMS OF THE WAR

At the last meeting of the medical society for the study of sexual science, Dr. Burchard discussed the influence which the war has had and will have on sexual life. In the first place, it affects the conditions governing marriage; considerations of intelligence and of deliberation are put aside, and love triumphs over good sense in the matter of marriage. On the other hand, loose forms of sexual life, concubinage and temporary relations become less during the war, so that these forms of serious sexual urgency are suspended. (On the other hand, it is to be noted that according to the statistics of the Berlin statictical bureau, the cases of fatal peritonitis after apparently criminal abortion have fallen off remarkably since the outbreak of the war.) While prostitution is not so closely connected with war as it was in the middle ages, when crowds of prostitutes followed the army, yet the dangers both in foreign countries and at home are greater than in time of peace, since prophylactic medical control is beset with the greatest difficulties. It is the duty of physicians to determine the existence of disease in the members of the army as soon as possible, and to guard against it by instruction regarding the dangers of illegitimate intercourse and the measures of prevention. Moreover, we may be sure that prostitution serves the purpose of the spies to a large extent. Of no less importance are the mental diseases in the war which are related to the sexual life. The lecturer had seen many cures of sexual neurasthenia, especially such forms as are similar to traumatic neuroses, which also are improved in the field. Other questions of sexual science which will be stimulated by the war are eugenics and racial hygiene, and the determination of sex. The study of the latter has made such progress through animal experiment that it is to be hoped it will soon be carried far enough so that the great loss of males will be compensated for. The question was also raised as to what bearing these facts might have on insanity and crime.

CONSANGUINEOUS MARRIAGE

This address was followed by one by Dr. Crzellitzer on the biologic effects of the marriage of blood relatives. The question was treated from the point of view of animal experiments, which were continued through many generations by the repeated pairing of brother and sister animals, or of parents with their young. Experiments with all our domestic animals gave uniform results: At first the progeny showed no recognizable effect, but after ten or twenty generations there appeared a gradual diminution of strength of constitution, the animals became smaller, more slender, more sensitive and more lacking in constitutional vigor; finally fertility failed, so that these incestuous races perished. The various diseases described by certain breeders are not incontrovertible evidence of the effect of inbreeding between healthy individuals, for the results were not tested as carefully as we must demand at the present day on the basis of the Mendelian laws. The consanguineous marriages of human beings do not stand on the same plane as these breeding experiments, because they comprise only a single union between related germinal cells. The collective investigations by interested physicians with reference to presumably healthy consanguineous parents, as they have been conducted in North America, England and France, have given contradictory results.

The condition is quite different with the investigation of diseases which occur in the progeny of such marriages, so far as the disease was latent in the parents but was awakened by the consanguineous marriage. Such conditions are recognizable by the fact that these diseases appear in the progeny of the consanguineous marriage to a greater proportionate extent than in the population at large in the community to which the consanguineous groups belong. In this way the importance of consanguinity for the occurrence of idiocy, congenital deaf-mutism and certain eye diseases, particularly pigmentary degeneration of the cornea, has been established. Crzellitzer has kept for many years the family records of a number of families in which occurred a number of inherited or possibly inherited eye diseases. In about 850 of these, reliable data with reference to the blood relationship or the reverse of the parents were obtained, so that they are available for the purpose of the investigation. In two cases it seems that a connection between the disease and the consanguinity must exist, namely, extreme myopia and strabismus. The latter result is new and is adapted to throw light on the general heredity of strabismus. Still the problem of consanguinity is only a special phase of the general problem of heredity, and is probably an instance of the superior opportunity for the persons with mixed heredity to find in their own families partners with similar mixed heredity over that in the rest of the homozygotic population, that is, among persons of pure heredity. In an organism of mixed heredity, a disposition which we call recessive may remain latent for decades but come to light on pairing with another organism of the same tendency. Thus the Mendelian laws give the key to some of the obscure problems of the ages.

STUDENTS IN THE WAR

The extent to which the students of the combined student corporations of the Swabian national university at Tübingen are participating in the war is an example of the patriotism of the German students in this gigantic struggle of the German people. All the students of a number of the societies who are in the field as reservists or as volunteers in other cases have gone either as soldiers or as nurses, while of another large part only a few have remained behind. The 143 members of the Evangelistic theological seminary have furnished 123, the 142 Catholics 100 to military service and the former 9 to the medical service. Altogether, of the 2,069 German students at Tübingen last semester, 1,500 are at the front and several hundred are in the medical service, among them citizens of all states of the empire. These figures show in a most favorable light the readiness of our university youth to sacrifice themselves for the country. In 1870-1871, 3,200 of the 13,765 students at that time in the German universities joined the army, and 1,200 were in the medical service.

THE DRUG SUPPLY

We have no lack of medicines. For camphor, the importation of which from Japan has entirely ceased, we have been obliged to resort to the synthetic product. The scientific deputation for medical affairs has reported in reply to a request from the minister that there is no objection to the external application of synthetic camphor, but that clinical experience must first be collected before an opinion can be given with reference to the internal use of this product. Accordingly, the minister has ordered investigations to be made in the university clinics and large hospitals for a period of three months on the curative effect of synthetic camphor.

Marriages

Louis Ashley Van Kleeck, M.D., Manhasset, N. Y., to Miss Grace Woodhull Van Nostrand of Little Neck, L. I., N. Y., January 16.

Bertrand Francis Drake, M.D., New Rochelle, N. Y., to Miss Jeannie Watson of Beechmont, N. Y., January 22.

Roman Daigse Martinez, M.D., White Castle, La., to Miss Ruth Comeaux of Bayou Goula, La., November 18.

Gilbert Van Vranken, M.D., Passaic, N. J., to Miss Rose Camwell of New York City, December 25.

David N. Walters, M.D., Campbellsport, Wis., to Miss Lida A. Esser of Milwaukee, January 12.

William H. Towne, M.D., Shiocton, Wis., to Miss Elsie Daniels of Seymour, Wis., December 29.

Sidney Kohn Simon, M.D., to Miss Emma R. Dreyfous, both of New Orleans, December 17.

John William Foley, M.D., to Mrs. Anna Postel Kradwell, both of Denver, recently.

John Ferdinand Golden, M.D., to Miss Florence F. Lydon, both of Chicago, January 19.

Hubert Rawiszer, M.D., to Miss Elizabeth Crowley, both of Omaha, Ga., January 20.

Deaths

Allison Maxwell, M.D. Miami Medical College, Cincinnati, 1876; a Fellow of the American Medical Association; for many years professor of diseases of the chest and clinical medicine at the Central College of Physicians and Surgeons, and dean of the Indiana Medical School, Indianapolis; a member of the Indianapolis State Board of Health for two terms; for three years a member and president of the Indianapolis Board of School Commissioners; prominent among insurance medical directors, and for several years medical director of the State Life Insurance Company, Indianapolis; died in the Methodist Hospital, Indianapolis, January 16, from embolism following a prostatectomy, aged 66.

Isaac Leopold, M.D. University of Pennsylvania, Philadelphia, 1886; a Fellow of the American Medical Association; ophthalmologist to the Jewish Hospital, Stetson Hospital and Kennington Hospital for Women, Philadelphia; medical director of the Jewish Maternity Hospital, Philadelphia, and Jewish Seaside Home for Invalids, Atlantic City, N. J.; ophthalmologist to and vice-president of the Philadelphia Jewish Sanatorium for Consumptives, Eagleville, Pa.; a prolific contributor to the literature of his specialty; died at his home in Philadelphia, January 18, from heart disease, aged 51.

Aaron Alonzo Noyes, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1850; a member of the Iowa State Medical Society; one of the organizers of the Delaware County Medical Society, Cedar Valley Medical Society, Cerro Gordo Medical Society and Upper Cedar Valley Medical Society; in 1876 a member of the examining board of the Medical Department of the Iowa State University; for eighteen years local surgeon for the Iowa Central Railroad; for forty-five years a practitioner of Mason City, Ia.; died at the home of his niece in Wauwatosa, Wis., aged 92.

William Joseph Sheehan, M.D. Yale University, New Haven, Conn., 1895; a Fellow of the American Medical Association and a well known and beloved practitioner of New Haven, Conn.; one of the founders of St. Raphael's Hospital, New Haven; died in that institution, January 13, from septic pneumonia following an arthritis of the ankle, aged 43. Members of the New Haven Medical Association served as active and honorary pallbearers at the funeral of Dr. Sheehan, and the association, at a special meeting, January 14, adopted resolutions of appreciation and regret.

John Farmer Winn, M.D. University of Virginia, Charlottesville, 1875; a member of the Medical Society of Virginia; professor of clinical obstetrics in the University College of Medicine, Richmond; consulting obstetrician to the Seventeenth Street Infirmary and Brook Avenue Obstetrical Clinic, and obstetrician to the Virginia Hospital, Richmond; for several years editor of the *Richmond Journal of Practice;* died at his home in Richmond, January 14, from pneumonia, aged 62.

Enoch Matthew Anderson, M.D. Rush Medical College, 1895; a Fellow of the American Medical Association and a well known specialist on diseases of the eye, ear, nose and throat of Spokane, Wash.; for several years in charge of the Sumpter (Ore.) General Hospital; first lieutenant and assistant surgeon of Oregon volunteers during the Spanish-American War, with service in the Philippines; died in the Deaconess Hospital, Spokane, January 11, from cerebral hemorrhage, aged 40.

Hunter Holmes Powell, M.D. Medical College of Virginia, Richmond, 1867; a Fellow of the American Medical Association; professor of obstetrics and pediatrics in the Western Reserve University, Cleveland; a member of the visiting staff of Lakeside Hospital, Cleveland, and of the consulting staff of the Cleveland City Hospital; director of St. Ann's Maternity and Orphan Asylum; president of the Municipal Milk Commission; died at his home in Cleveland, January 9, aged 71.

G. Henri Desjardins, M.D. University of the Victoria College, Coburg, Ont., 1871; was one of the founders of the Nazareth Institute for the Blind, Montreal; formerly a Papal Zouave and later a practitioner and ophthalmologist of Boston and Montreal; at one time a member of the faculty of his Alma Mater; died at the home of his sister in Montreal, January 9, aged 66.

George Allen Nash, M.D. St. Joseph Hospital Medical College, St. Joseph, Mo., 1879; a Fellow of the American Medical Association and one of the oldest practitioners of Maryville, Mo.; one of the founders of and chief surgeon to St. Francis' Hospital, Maryville; local surgeon at Maryville for the Wabash and Burlington System; died in St. Francis' Hospital, January 8, from carcinoma of the pancreas, for which operation had been performed, December 17, aged 66.

Henry Bezou, M.D. Tulane University, New Orleans, 1871; one of the leaders in the overthrow of the Kellogg government in 1874; for two terms a member of the Louisiana State Board of Health and coroner of Orleans Parish; one of the founders of the New Orleans Eye, Ear, Nose and Throat Hospital; died at the home of his daughter in New Orleans, January 10.

Charles Bowman, M.D. University of Pennsylvania, Philadelphia, 1849; in charge of an Army general hospital at New Albany, Ind., during the Civil War; one of the oldest practitioners of southern Indiana and for many years a member of the Floyd County Medical Society; died at his home, January 12, from influenza, aged 89.

James Albert Rowan, M.D. Tulane University, New Orleans, 1873; a member of the Mississippi State Medical Association and once president of the Copiah County Medical Society; one of the best known practitioners of South Mississippi; died at his home in Wesson, January 8, from cerebral hemorrhage, aged 62.

George Dodge Rowe, M.D. Medical School of Maine, Brunswick, 1868; a member of the Iowa State Medical Society; for many years a practitioner of Boone, Ia.; died in Hot Springs, Ark., January 13, from malignant disease of the bladder and intestine, eight days after a surgical operation, aged 69.

Walter W. Williams, M.D. Michigan College of Medicine and Surgery, Detroit, 1897; a member of the Michigan State Medical Society; from 1887 to 1890 a member of the house of representatives from Bay County; died at his home in Bay City, January 9, from nephritis, aged 67.

Charles Smith, M.D. Long Island College Hospital, Brooklyn, 1890; a Fellow of the American Medical Association; from 1900 to 1903 United States vice consul at Puerto Cortez, Honduras; died at his home in Riverside, Conn., January 8, from heart disease, aged 46.

Walter DeWitt Boggs, M.D. Long Island College Hospital, Brooklyn, 1910; instructor in physical diagnosis in his Alma Mater for a year; a specialist in pathology and pediatrics of Pasadena, Cal.; died at his home in Altadena, Cal., January 5, aged 32.

Charlotte W. Ford, M.D. Woman's Medical College of the New York Infirmary for Women and Children, New York City, 1873; for many years a practitioner of New York City; died at her home near Morristown, N. J., January 9, from heart disease.

Henry Walton Wood, M.D. University of Maryland, Baltimore, 1902; of Boston and New Bedford, Mass.; a Fellow of the American Medical Association and a specialist in mental diseases; died in Jefferson Hospital, Philadelphia, January 12, aged 35.

Lewis C. Hammond, M.D. Michigan College of Medicine, Detroit, 1883; health officer of Bay City, Mich., in 1910; a practitioner of Clarkston, Mich.; died January 12, from heart disease while making a professional call in Clarkston, aged 59.

Emery G. Jones, M.D. Jefferson Medical College, 1884; a retired practitioner of Wilkinsburg, Pa.; was found dead at his home in that city, January 6, from the result of a gunshot wound, believed to have been self-inflicted with suicidal intent, aged 55.

Silas W. Newman, M.D. Physio-Medical College of Medicine and Surgery, Chicago, 1888; school director and for several years president of the Board of Health of Scottdale, Pa.; died at his home, December 28, from carcinoma of the stomach, aged 61.

Diederick A. Schumacher, M.D. Wisconsin College of Physicians and Surgeons, Milwaukee, 1898; Rush Medical College, 1900; formerly health officer of Aberdeen, Wash.; died at his home in that city, December 28, from pulmonary abscess, aged 56.

Marshall William Harner, M.D. College of Physicians and Surgeons, Chicago, 1905; a Fellow of the American Medical Association; of Clay Center, Kan.; died December 4, from shock following an operation for intestinal obstruction, aged 39.

Thomas L. Thompson, M.D. Long Island College Hospital, Brooklyn, 1879; formerly a member of the Indiana State

Calculating from the bromid determination, each dose, one teaspoonful (1 fluidram), contains the equivalent of 16.8 grains of potassium bromid, and each daily dose (three teaspoonfuls) corresponds to 50.4 grains of potassium bromid.

The report shows, as might have been expected, that the Peebles epilepsy treatment consists, essentially, in giving bromids. The use of bromids in the treatment of epilepsy has been known for years. The bromid treatment is not in any sense of the word a cure; it is at best but palliative. The drug, acting as a sedative, tends to suppress the attack but should be used with the greatest circumspection and care. There is no justification for selling to epileptics, bromid-containing nostrums bearing no hint of the presence of such drugs and without warning of their powerful and dangerous character. The indiscriminate use of bromids is dangerous. The results that may follow their long continued use has been thus described:

> "In other cases evidences of mental aberration develops, the patient becoming irritable, morose and even homicidal. Sometimes, however, we find melancholy and hallucinations, and, rarely, exalted ideas. In still others a dangerous suffocative bronchitis develops, the patient may become profoundly cachectic, or the condition may resemble typhoid fever."

RADIO-REM

A correspondent sends to The Journal an advertisement of the Radio-Rem outfit (Schieffelin and Co.), which according to the advertisements, consists of a box containing eight glass stoppered bottles and an equal number of rods coated with radium sulphate. If the bottles are filled with water and the rod inserted and left to stand a certain time, the water is said to become charged with radium emanation. The claim is made that effects similar to those obtained at mineral springs are produced by drinking this "radio-active" water.

In view of the experimental and unsettled status of the use of radium in internal medicine, The Journal cannot express an opinion as to its value. Certainly convincing evidence of its utility has not been advanced.

The emanation in sufficient dosage is capable of producing marked effects on the animal organism. It is admitted, even by the strongest advocates of such treatment, (Bickel: Moderne Radium und Thorium Therapie, p. 31) that in no case is there an action on the cause of the disease. The largest class of diseases in which radium emanation has gained a reputation includes the various forms of arthritis, myalgia, neuralgia, etc. Improvement has been noted, but there are so many influences involved, especially in the class of diseases represented by the general term rheumatism, that a definite judgment is very difficult to form (see editorial The Journal, Jan. 17, 1914, p. 209). Newcomet says: "But as most of the diseases in which they (the radio-active elements) have been employed belong to a class for which certain forms of treatment have been periodically promulgated to be used for a short time, and finally be forgotten, more proof must be given of their efficiency before they can be universally adopted." (Radium and Radiotherapy, p. 288). The use of radium emanation must therefore be regarded as in the experimental stage.

Bearing in mind the very doubtful value of radium in internal medicine, the questions arise: (1) Does this apparatus give a solution of radium emanation? (2) Is the quantity of emanation sufficient to be of any value?

1. It is quite possible that the rod coated with radium sulphate may produce the amount of radium emanation claimed, but as the general practitioner is not equipped to measure the amount of radium on the stick, or the emanation in the water, he must accept the manufacturer's claim.

2. The value of radium emanation in any given condition is presumably dependent on the use of a proper dosage. Because arsenic in milligram doses is an effective remedy it does not follow that the thousandth part of a milligram will produce any effect. The dosage of radium emanation is measured usually in Mache units. Those who employ this form of treatment regard 3,000 to 5,000 Mache units as the beginning daily dose, to be increased at the end of a week if a reaction is not experienced. A dosage below this amount is not likely to be of any service. The dosage provided by the outfit described above is said to be only 100 Mache units, an amount which is probably inadequate. It should be remembered that radium produces different effects when small doses are given at intervals than it does when the total amount is given in one dose.

It is claimed that by the use of this outfit a substitute for natural mineral water may be supplied. One of the puzzling things about mineral waters is that when drunk at the spring they seem to have a different effect from that which they produce when bottled. Formerly this difference was explained by the assumption that rest, environment, regular habits and climate played a large part, but since the discovery of radium there is a tendency to attribute it to a loss of radio-activity in the bottled waters. Some natural springs, are, to be sure, markedly radio-active. Other springs to which empiricism has attributed equal therapeutic powers do not possess any exceptional radio-activity. There is moreover no convincing proof that radio-activity in mineral waters has any value. The proposition to make a mineral spring by placing a radium-bearing stick in a glass of water is another appeal to the belief in the mysterious.

ARTICLES REFUSED RECOGNITION

Reports of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require a lengthy report. Articles with the titles starred will be printed in full in the Reports of the Council on Pharmacy and Chemistry for 1914. A reprint of any of these unabridged reports will be sent on receipt of a two cent stamp. Previous instalments of abstracts appeared in The Journal, Nov. 14 and 21, Dec. 12, 1914, and Jan. 2, 1915.

G. G. Phenoleum Disinfectant

This material is a solution sold by the G. G. Chemical Company, Inc., of New York and claimed to be composed of the following ingredients:

> ". . . Volatile Hydrocarbons, Phenols, Resin Acids, Sodium Oxide and Heavy Hydrocarbons."

For it they claim the following properties:

> "PREVENTS DISEASES, KILLS SEWER GAS, PURIFIES THE TOILET."
>
> "*For any skin disease, 'tis as good for man as for beast.*"

As to its virtues as a disinfectant the manufacturers claim a phenol coefficient of 5 or 6. The disinfecting power is not however stated on the label as required by the Council for phenol disinfectants. Disregarding entirely the fact that disinfectants are available with a much higher phenol coefficient than the one claimed for this product, the statement is made that it is

> ". . . the most powerful disinfectant known."

As such claims are self-evidently unwarranted, G. G. Phenoleum Disinfectant was refused recognition.

Phytin—Fortossan

Phytin manufactured by the Society of Chemical Industry, Basle, Switzerland, and sold by A. Klipstein and Co., is an organic phosphorus compound said to be the "Acid Calcium-Magnesium Salt of Phytinic Acid (Inosit Phosphoric Acid or Anhydro-Oxymethylene-Diphosphoric Acid)" obtained from cereals and legumes.

The trade package of Phytin constitutes an indirect advertisement to the public.

The Council rejected Phytin because unwarranted and exaggerated therapeutic claims are made for this product based on the entirely undemonstrated assumptions: (1) that phosphorus is assimilated only from organic combinations (it is even implied that this must be in the form of Phytin, and that milk is incapable of supplying the phosphorus needs of infants); (2) that a long list of diseases, ranging from rickets to hysteria, are due to deranged phosphorus metabolism; (3) that all these diseases are cured or markedly benefited by Phytin.

In brief, the claims rehearse *every* point of the more or less discredited phosphorus propaganda, in exactly *the* same way as it was rehearsed successively by the exploiters of hypophosphites, lecithin, glycerophosphates, and amorphous phosphorus. It is conceded by the writers of the advertising pamphlets for Phytin that the preceding claims were erroneous; but no evidence is given to warrant the belief that the Phytin claims are less erroneous.

The misleading statements are most extreme. By the use of bold type particular stress is laid on the preposterous and vicious claim that Phytin

> "radically and permanently removes sexual debility."

Fortossan is a preparation of Phytin and sugar of milk, also manufactured by the Society of Chemical Industry, Basle, Switzerland, and sold by A. Klipstein and Co. Since Fortossan is a simple preparation of Phytin the Council voted that the rejection of Phytin should also apply to Fortossan.

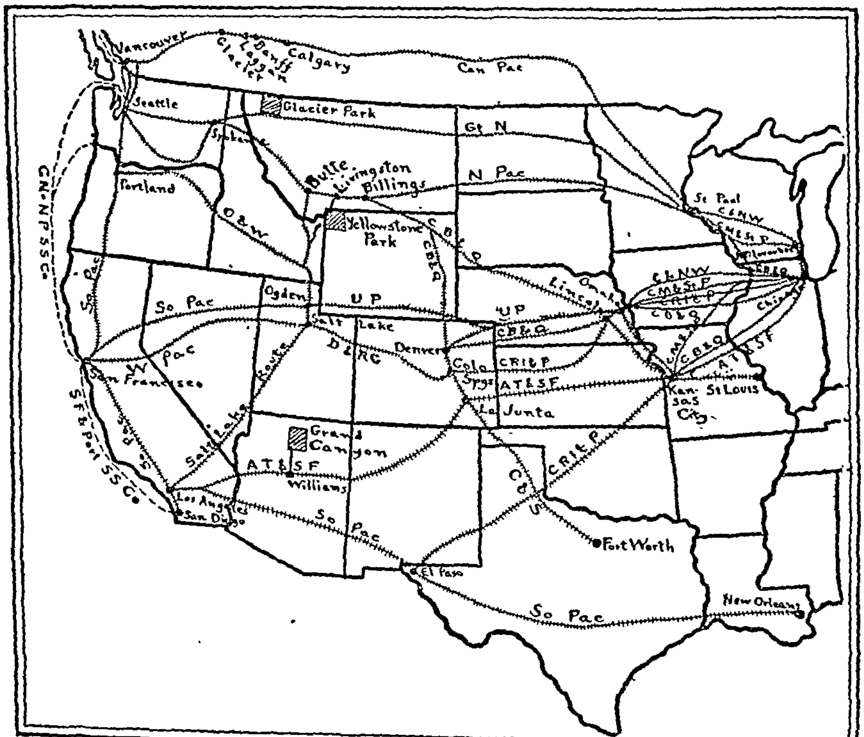
Association News

THE SAN FRANCISCO SESSION

Suggestions as to Railroad Routes Which May Be Used in Making the Trip

Preparations for the annual session of the American Medical Association, to be held in San Francisco, June 21-28, are under way. The several routes to San Francisco are here outlined briefly, in order that Fellows may have information to guide them in planning the trip. Travel from the East to the Pacific Coast passes in the main through three "gateways" — Chicago, St. Louis and New Orleans. In other words, eastern trunk lines carry passengers to Chicago, St. Louis or New Orleans and from these points, other railroad systems take them to the Pacific Coatst.

These western routes can be grouped roughly, according to the point at which they cross the Rocky Mountains, into the northern (the extreme northern one going through Canada), the central and the southern routes. Each has its attractions.



Outline map, showing some of the railroad routes to San Francisco and giving their general direction.

FROM EASTERN POINTS

From the New England States, the shorter route is through Chicago; but if the number of miles traveled and the time do not have to be too carefully considered, the trip may be southward, through New York, Philadelphia and Washington to New Orleans. From the Middle Atlantic and East Central States the more direct routings are by way of either Chicago or St. Louis, but the New Orleans gateway merits consideration, especially from the eastern section of this territory. From the South Atlantic States, New Orleans and St. Louis are the nearer gateways, but excellent trains place Chicago at the service of those from this territory.

THROUGH CHICAGO

The six railroad terminals in Chicago are here listed, beginning with the one located to the extreme southeast of the group, the several lines using the different stations being noted. (Roads coming into the city from the east and south are in roman, those going west are in italic type.)

1. Central Station, Twelfth Street and Lake Front: Illinois Central Railroad (*also operates a line west to Omaha*); and New York Central Lines, Big Four Route and Michigan Central Railroad.
2. Dearborn Station (also known as Polk Street Station), Dearborn and Polk Streets: *Atchison, Topeka and Santa Fe Railway;* Chesapeake and Ohio Railway; Chicago and Eastern Illinois Railroad; Erie Railroad; Grand Trunk Railway; Monon Route, and Wabash Railroad (*also operates lines to Omaha and to Kansas City*).
3. LaSalle Street Station, LaSalle and Van Buren Streets: The New York Central Lines, the Lake Shore and Michigan Southern Railway, and *Rock Island Lines.*
4. Grand Central Depot, Fifth Avenue and Harrison Street: Baltimore and Ohio Railroad; *Chicago Great Western; Minneapolis, St. Paul and Sault Ste. Marie Railway*, and Pere Marquette Railroad.
5. Union Passenger Station, Canal and Adams Streets: *Burlington Route; Chicago and Alton Railroad; Chicago, Milwaukee and St. Paul Railway* and Pennsylvania Lines.
6. Chicago and Northwestern Passenger Terminal, Madison and Canal Streets: *Chicago and Northwestern Railroad.*

THE NORTHERN ROUTES

From Chicago, for one of the northern transcontinental routes, the next central railroad point is St. Paul or Minneapolis. The principal lines to be considered are the Burlington; the Chicago and Northwestern; the Chicago, Milwaukee and St. Paul (this road operates a line to Seattle); the Great Western; the Rock Island, and the Minneapolis, St. Paul and Sault Ste. Marie.

From St. Paul and Minneapolis, the Canadian Pacific Route is through Minnesota, the Dakotas and the southern portion of western Canada. Its magnificent scenic attractions have made this line justly popular. The chief points of interest are at Banff, Laggan, Field and Glacier. At each of these points, the railroad company conducts a well-appointed hostelry for the convenience of sightseers. There are additional comfortable hotels provided along the route, so that it is possible to arrange an itinerary which will permit seeing the entire Canadian Rockies along this route by daylight travel.

The Great Northern route may be taken at St. Paul or directly from Chicago, as already noted. This road goes through the great wheat growing districts of Minnesota and the Dakotas, and through Montana, Idaho and Washington. The special scenic attraction of this railroad is that it provides access to Glacier National Park, a tour of which ordinarily occupies about five days.

Or, the Northern Pacific route may be selected from St. Paul and Minneapolis, with a view of visiting Yellowstone National Park. Its course is very similar to that of the

Great Northern through wheat country, "bad lands" and Rocky Mountain passes.

All these northern routes center at Seattle or Tacoma, from which points the Shasta route to San Francisco may be taken, or the final portion of the trip to San Francisco may be by boat.

THE CENTRAL ROUTES

Central lines from Chicago are over the Chicago and Northwestern to Omaha, then via the Union Pacific through Cheyenne and Ogden, and the Southern Pacific to San Francisco. This is the most direct of all routes available, and the trip can be made in about ten hours less time than over any other lines. The special trains making this fast time are extra-fare trains.

Other central routes are via the Burlington to Denver, or the Chicago, Rock Island and Pacific to Colorado Springs. These lines pass through the great corn belt—Illinois, Iowa, Nebraska and Kansas. Thirty-six hours may profitably be employed in and around Denver and Colorado Springs, visits being made to Pike's Peak, the Garden of the Gods, Manitou and other neighboring points of interest. By arranging to leave Denver in the late evening so as to pass through Colorado Springs about 4 o'clock in the morning, over the Denver and Rio Grande, one may see the wonders of the Royal Gorge early during the following day, arriving at Glenwood Springs in the late afternoon and Salt Lake City the morning following. Salt Lake City merits a stop of at least three or four hours. By leaving this point about noon over the Western Pacific, one may enjoy the superb scenery of the grand canyon of the Feather River on the last day of the journey, and San Francisco should be reached in the late afternoon or early evening.

THE SOUTHERN ROUTE

The southern route from Chicago is via the Atchison, Topeka and Santa Fe through Kansas City, La Junta, Albuquerque and Los Angeles. At Williams, a short side trip permits of a visit to the wonderful Grand Canyon of the Colorado. A well-appointed hotel, located on the edge of the Grand Canyon, permits the traveler to stay for as long or as short a time as he desires to view these wonders. Those who desire to make the trip down the canyon to the river will have to reach the Grand Canyon so that they can start down the trail by about 9 o'clock in the morning, as it takes the greater part of a day to make this trip. Parties may make arrangements to drive to different points of interest along the rim of the Canyon.

THE ST. LOUIS GATEWAY

At St. Louis all the railroads use the same station: Baltimore and Ohio Railroad; Big Four Route; *Burlington Route; Chicago and Alton Railroad;* Chicago and Eastern Illinois Railroad; *Chicago Rock Island and Pacific Lines; Frisco Lines;* Illinois Central Railroad; Louisville and Nashville Railroad; Louisville, Henderson and St. Louis Railway; *Missouri, Kansas and Texas Railway; Missouri Pacific Railway;* Mobile and Ohio Railroad; Pennsylvania Lines; *St. Louis, Iron Mountain and Southern Railway; St. Louis Southwestern Railway;* Southern Railway; Toledo, St. Louis and Western Railroad, and The Wabash Railroad (*also operates line west to Omaha and to Kansas City*). The central and southern routes noted above are the more available to those who use this gateway, connections therewith being made at Kansas City or Omaha.

NEW ORLEANS ROUTINGS

From New Orleans the direct route is over the Southern Pacific, which skirts the southern border of Texas, New Mexico and Arizona, passes through Los Angeles and goes up the west coast of California to San Francisco.

RAILROAD AND PULLMAN FARES

The following railroad fares have been announced to San Francisco and return: via direct routes from Chicago, $62.50; from St. Louis or New Orleans, $57.50; one way (not both) via Portland, Ore., Seattle, Wash., or Victoria, B. C., from Chicago, $80; from St. Louis, $75; from New Orleans, $83.75. Rates from eastern territory to these three gateways will be announced later.

The cost of Pullman service to San Francisco can be estimated from the following rates from the points mentioned. These are for space in regular line cars for a continuous trip and do not cover service in special cars or trains where stopovers are to be made at points en route to San Francisco.

Pullman rates from the following principal cities are:

PULLMAN RATES TO SAN FRANCISCO

From	Drawing Room	Compartment	Section		Tourist	
			Upper	Lower	Upper	Lower
Boston	65.00	52.00	14.80	18.50	7.80	9.75
New York	63.00	50.50	14.40	18.00	*	*
Washington, D. C.	62.00	49.00	14.00	17.50	....	9.00
Chicago	46.00	36.50	10.40	13.00	5.60	7.00
St. Louis	44.00	35.00	10.00	12.50	5.20	6.50
New Orleans......	41.00	32.50	9.20	11.50	4.60	5.75

* No Tourist.

BY WATER ROUTES

In addition to these all-rail routes, part or all of the trip may be made by water. From points on the Atlantic Coast, boats sail to New Orleans, and then through the Panama Canal or directly through the canal and up the Pacific Coast to San Francisco. This all-water route takes about two weeks, and the rates vary in accordance with the accommodations; first cabin passage, one way, between New York and San Francisco, is $125 and up. On the Pacific Coast, the trip may be made by boat between the following points: San Diego and Los Angeles, San Francisco, Portland, Seattle or Tacoma and Vancouver. Boats may also be taken at Buffalo or any of the lake points through the Great Lakes to Chicago.

The foregoing is intended rather to suggest routes which may be used in making the trip to San Francisco than to present a complete and detailed announcement of these routes. Those who contemplate the trip should consult their local passenger agents, who will be able to give them exact information regarding routes, schedules, rates and stop-over privileges.

Correspondence

Flight of Mosquitoes

To the Editor:—In the article "Prevention is Greater than Cure," in the section headed "Mosquito Pest" (The Journal, Oct. 17, 1914, p. 1392) the categorical statement is made: "Mosquitoes, unless wind-blown, travel only a few hundred yards from their source of breeding." This is incorrect. Numerous studies by many observers have conclusively shown that many species, including such proved disease carriers as *A. albimanus, C. fatigans,* and *A. argyritarsis,* travel very considerably more than "a few hundred yards," unless by "a few hundred yards" the author intends to cover 1,000 to 2,000 yards. Also, at least certain species, and among these the *A. albimanus,* travel by preference *against* a mild breeze, one not exceeding a velocity of 4 miles per hour. The supposition of mosquitoes being "blown by wind" is open to serious doubt. It is more than likely that they travel during the calm immediately following a blow. In experimental work carried on in Panama, anopheles were invariably caught in larger numbers in the traps set on the lee sides of houses.

"These salt-water mosquitoes do not carry disease."

A. albimanus and *argyritarsis* breed in salt water under certain conditions. We have found these species breeding very prolifically in lagoons with a chlorin content almost equal to sea water.

I would suggest the perusal of Le Prince's paper in the *Transactions* of the Fifteenth International Congress on

Hygiene and Demography, and the articles dealing with mosquitoes in the reports of the New Jersey Agricultural Experiment Station.

A. J. Orenstein,
Rand Mines, Ltd., Johannesburg, Africa.

A Substitute for Potassium Permanganate to Liberate Formaldehyd Gas From a Water Solution

To the Editor:—In The Journal, Sept. 19, 1914, p. 1025, I presented the formula of a mixture in which potassium permanganate was replaced by sodium dichromate.

We have found that the formaldehyd solution shipped in combination with the sulphuric acid, when subjected to the extremely low temperatures of winter, is not sufficiently stable for Northern climates. By adding 1½ fluidounces of glycerin to this formula, we have secured a stable solution that will bear moderately low temperatures without loss of efficiency and without polymerization. We are now using the following formula:

Sodium dichromate	10 ounces avoirdupois
Saturated solution of formaldehyd gas	1 pint
Sulphuric acid, commercial	1½ fluidounces
Glycerin	1½ fluidounces

We have also learned that when the acidulated solution has shown a tendency to become cloudy or milky because of the low temperatures, it may be clarified and made potent by gently warming for a long period of time.

Samuel G. Dixon, M.D., Harrisburg, Pa.
Commissioner of Health, Commonwealth of Pennsylvania.

The "Twilight Sleep"

To the Editor:—I am enclosing a little article from a lay paper—(clipping regarding the formation of a club known as the "Twilight Sleep Association"). I think the matter of the 'twilight sleep' is taking a serious character and it is high time for the American Medical Association to take steps against these quacks, whose first and only aim is the money part attached to it. They certainly have clever and excellent press agents and lead the public well.

H. Hallarman, M.D., New York City.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE HARRISON BILL

To the Editor:—According to my idea of the Harrison bill, it does not affect the men who write prescriptions, or prevent hypodermic medication, etc., but affects dispensers whether pharmacist or doctors of any sort. Am I correct? The $1 tax is what is troubling them. Kindly answer.

J. A. H., Pittsburgh.

To the Editor:—Relative to the recently passed federal law regulating the traffic in habit forming drugs, The Journal with its characteristic promptness presented it to the profession in a clear, compact and scientific manner.

I have no legal knowledge other than an average amount of "horse sense," but immediately on looking it over, when reading my journal, I thought that while the intentions of the framers may have been of the best, their attempts were short sighted to say the least. On the other hand, they may be the victims of some hidden power of criminal drug traffickers. This is no excuse, however, and if I am correct in the conclusions I have drawn, then the framers ought to be ashamed of themselves for making another farcical law, one impossible to enforce.

Turn to Section 6 and you will note it reads in part that "this act shall not apply to preparations or remedies for external use only." Fine isn't it? What do you think, Doctor Editor?

H. J. G.

Answer.—These are samples of inquiries received from readers of The Journal asking for details regarding the Harrison bill and its effect on physicians. This bill was before Congress for over two years, during which time it was frequently revised in committees or on the floor. On account of the numerous changes made, it is difficult, if not impossible, to know in exactly what form the bill finally passed. Three drug journals have published what purports to be the complete and exact text of the bill as enacted, yet no two of these three versions agree. It is obviously useless to comment on the bill until its exact provisions are known. A letter addressed to the United States Commissioner of Internal Revenue, asking for a certified copy of the law and of any rulings bearing on it, has elicited the reply that official copies of the bill have not yet been issued, but will shortly be published with official rulings as to its meaning, and regulations for its enforcement. As soon as this official information is available, The Journal will give a summary of the law for the benefit of its readers. In the meantime, there is no occasion for alarm or uneasiness on the part of physicians. The enforcement of a law involving so many details as the Harrison law will necessarily be undertaken slowly, and due announcement of the measure and its provisions will undoubtedly be made to all those affected by it. Several drug companies have recently sent out printed statements to their patrons regarding the provisions of this bill. In several cases, the statements made are clearly erroneous. Physicians are urged to await further information through the columns of The Journal.

METHOD OF CHAMPIONNIÈRE—EMULSION OF BALSAM OF PERU

To the Editor:—1. Where can I obtain detailed information in regard to Lucas-Championnière's method of treating fractures? Is there a book on the subject published in English?

2. Give me a formula for an emulsion of balsam of Peru containing either 5 or 10 minims of the drug to the dram of emulsion.

H. W. C.

Answer.—1. The following is a list of references to the original articles of Dr. Championnière. Practically all books on massage discuss his methods:

Lucas-Championnière, J.: Traitement des fractures par le massage et la mobilisation, Paris. Rueff & Cie., 1895, pp. 564.
Lucas-Championnière, J.: Les dangers de l'immobilisation des membres; fragilité des os; altération de la nutrition du membre, *Jour. de méd. et chir. prat.*, 1907, lxxviii, 81.
Lucas-Championnière, J.: Treatment of Fractures, *Brit. Med. Jour.*, 1906, ii, 1669.
Lucas-Championnière, J.: Treatment of Fractures by Massage and Mobilisation, *Brit. Med. Jour.*, 1912, ii, 1530.
Lucas-Championnière, J.: Traitement de la fracture du col du fémur par le mouvement immédiat et le lever, *Jour. de méd. et chir. prat.*, 1912, lxxxiv, 245.
Lucas-Championnière, J.: Détermination des nécessités du mouvement dans le traitement des fractures preliminaire du massage et de la mobilisation; préparation au traitement actif, *Jour. de méd. et chir. prat.*, 1910, lxxxi, 289.

2. Mistura olei-balsamica N. F. is an alcoholic solution of about 1 per cent. (5 grains to the ounce) of balsam of Peru and various aromatic oils.

The following emulsion gives practically 4 minims to the dram, and by increasing the amount of balsam of Peru to 4 drams, a proportion of 5 minims to the dram will be obtained. (See A. W. Gerrard, *Am. Jour. Pharm.*, November, 1880):

Balsam of Peru	3 drams
Powdered acacia	2 drams
Simple sirup	6 drams
Water ....to	6 ounces

SOUTHEY'S TUBES IN DROPSY

To the Editor:—In a communication on "Sodium Chlorid in Bright's Disease" (The Journal, Dec. 26, 1914, *p.* 2305), Dr. Paul Z. Hebert of New York refers to the use of "Southey's tubes *to reduce* dropsy." Can you give me further information *with regard* to the use of the tubes, and indicate how successful the use has *been*?

J. W. Crenshaw, M.D., Cadiz, Ky.

Answer.—The use of Southey's tubes is described as follows by G. P. Müller *in* "Practical Treatment," Musser and Kelly, Vol. I, page 689:

> The apparatus consists of a *trocar* and several cannulas, the latter having lateral openings at their distal ends. After careful cleansing of the skin with soap and water, alcohol, and tincture of iodin, the skin is punctured at right angles to the surface and the trocar and cannula pushed as far as the muscle tissue. *The trocar* is then withdrawn and the cannula fitted to a piece of rubber tubing which drains into a receptacle. *Three or four* cannulas may be introduced in this manner, and should be supported by gauze packed around them. The serum often clots in the tubes and interferes with the drainage.

This method has been generally recommended, and is of temporary service in removal of edema.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Connecticut: New Haven, March 8-9. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic; New Haven, March 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic: New Haven, March 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Kansas: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, March 9-10. Sec., Dr. F. W. Searle, 776 Congress Street.

Massachusetts: Boston, March 9-11. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Georgia October Report

Dr. C. T. Nolan, secretary of the Board of Medical Examiners of Georgia, reports the written examination held at Atlanta, Oct. 13-15, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 36, of whom 20 passed and 16 failed. Fourteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Birmingham Medical College (1913) 80.1;	(1914)	83.6, 85.9; 88.
Hospital Medical College, Eclectic	(1911)	83.8
University of Georgia	(1901)	83.3
University of Louisville	(1914)	92.3
University of Maryland	(1912)	89
Missouri Medical College	(1891)	80.4*
St. Louis College of Physicians and Surgeons	(1909)	86.3*
Leonard Medical School *(1913) 87.1;*	*(1914)*	*89.6*
Medical College of the State of South Carolina	(1914)	89.7
Chattanooga Medical College	(1896)	85.2
Meharry Medical College	(1914)	80, 83.7
University of West Tennessee	*(1912)*	80.8
Vanderbilt University	(1914)	93.1, 93.2
McGill University	(1913)	92.3

FAILED

College	Year Grad.	Per Cent.
Birmingham Medical College	(1914)	71.8, 75.7
Atlanta Medical College	(1914)	70.7
Georgia College of Eclectic Medicine and Surgery	(1914)	71.7, 73.4, 75.5, 78.5.
Southern College of Medicine and Surgery	(1913)	75.2
Bennett Medical College	(1914)	76.3
Knoxville Medical College	(1908)	75.6
Meharry Medical College (1908) 75; (1912) 77.9;	(1914)	69.3, 77.1
University of Tennessee	*(1914)*	*72.5, 73.8*

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Southern Medical College	(1886)	Oklahoma
Louisville Medical College	(1893)	Oklahoma
University of Maryland	(1911)	Maryland
Eclectic Medical University, Kansas City	(1900)	Oklahoma
University Medical College, Kansas City	(1908)	Oklahoma
Columbia University	(1909)	N. Carolina
Cleveland Homeopathic Medical College	(1907)	Oklahoma
Eclectic Medical College, Cincinnati	(1905)	Oklahoma
Jefferson Medical College	(1912)	N. Carolina
Temple University (1912) Maryland;	(1913)	Dist. Colum.
Memphis Hospital Medical College	(1891)	Oklahoma
Physio-Medical College of Texas	(1906)	Oklahoma
University of Virginia	(1911)	*Virginia*

* Official information from these colleges states that their records do not contain the names of these candidates.

Louisiana October Report

Dr. E. L. Leckert, secretary of the Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, Oct. 29-31, 1914. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 32, of whom 17 passed and 15 failed. Four candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per. Cent.
Birmingham Medical College	(1912)	76.1
Louisville Medical College	(1896)	76.3
University of Louisville	(1912)	84.7
Tulane University of Louisiana (1911) 86.2; (1913) 93;	(1914)	76.3, 84.4, 87, 89.7.
Memphis Hospital Medical College (1911) 78.2;	(1912)	76.1
University of Tennessee (1913) *79.7;* (1914) *76.7*, 77.6, 79.3.		
Vanderbilt University	(1914)	79.8
Baylor University	(1914)	87.5

FAILED

College	Year Grad.	Per Cent.
Atlanta College of Physicians and Surgeons	(1913)	*
Maryland Medical College	(1910)	63.2
Meharry Medical College	(1912)	64.8
Memphis Hosp. Med. Coll. (1901) 60.1; (1908) 59.7;	(1912)	45.8; (1913) 47.
University of Tennessee (1913) *54.8, 73.3;* (1914) *60.7, 63.7*, 66.2, 73.5.		
College of Physicians and Surgeons, Dallas	(1907)	59.7†
Dallas Medical College	(1903)	56.2

* Withdrew.

† Graduation not verified.

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Johns Hopkins *University*	(1911)	Maryland
Harvard University	(1899)	Vermont
Jefferson Medical College	(1908)	Penna.
University of Pennsylvania	(1907)	Penna.

Montana October Report

Dr. William C. Riddell, secretary of the Board of Medical Examiners of Montana, reports the written examination he' at Helena, Oct. 6, 1914. The total number of subjects exan ined in was 10; total number of questions asked, 50; percer tage required to pass, 75. The total number of candidat examined was 25, of whom 16 passed and 9 failed. The fo lowing colleges were represented:

PASSED

College	Year Grad.	Pe Cen
College of Physicians and Surgeons, Los Angeles	(1912)	75.5
Georgetown University	*(1914)*	*82.4*
American Medical Missionary College, Chicago	(1905)	75.2
Bennett Medical College	(1914)	81.1
Chicago College of Medicine and Surgery (1913) 77.5;	(1914)	79.3
Northwestern University	(1914)	80.1
Rush Medical College	(1914)	85.2
Kentucky School of Medicine	(1904)	82.5
Johns Hopkins University	(1914)	86.7
University and Bellevue Hospital Medical College	(1899)	82.5
University of Pennsylvania	(1914)	78.1
Marquette University	(1914)	76.7
University of Toronto (1913) 79.2;	(1914)	77.3
Western University, London, Ont.	*(1901)*	77.2

FAILED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1913)	69
College of Physicians and Surgeons, Chicago	(1910)	68.3
National Medical University, Chicago	*(1907)*	*
Keokuk Medical College	(1903)	73
John A. Creighton Medical College	(1913)	72
Medico-Chirurgical College of Philadelphia	(1900)	68
University College of Medicine, Richmond	*(1907)*	70.7
Marquette University (1913) 64.5;	(1914	71.4

* No grade given; graduation not verified.

Wisconsin October Report

Dr. John M. Beffel, secretary of the Wisconsin State Board of Medical Examiners, reports the written examination held at Madison, October, 1914. The total number of subjects examined in was 24; total number of questions asked, 100; percentage required to pass, 75. One candidate was examined and passed. Fifteen candidates, including 3 osteopaths, were licensed through reciprocity. Nine candidates, including 1 osteopath, were granted complimentary licenses. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Jefferson Medical College	(1884)	82

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1913)	Tennessee
Northwestern University	*(1903)* (1909)	Illinois
Rush Medical College	(1900)	*Illinois*
Indiana University	(1913)	Indiana
Tulane University of Louisiana	(1912)	*Mississippi*
Johns Hopkins University	(1911)	*Maryland*
University of Minnesota	(1899)	Minnesota
Dartmouth Medical School	(1910)	New Hamp.
University of Buffalo	(1911)	New York
Woman's Medical College of Pennsylvania	*(1911)*	Virginia
Royal University of Berlin	(1886)	Kansas

Book Notices

Operative Surgery. The Head and Neck, the Thorax and the Abdomen. By Edward H. Taylor, M.D., B.S., F.R.C.S.I., Professor of Surgery in the University of Dublin. Cloth. Price, $9 net. Pp. 524, with 300 illustrations. New York: William Wood & Co., 1914.

The author does not attempt to cover fully the operative surgery of the head, neck, thorax and abdomen, but deals only with the commoner and more important operations. There is a brief and elementary introductory chapter on the nature of infection and general surgical technic which more properly belongs in a book on principles of surgery. Ether is recommended as the general anesthetic of choice, and the statement that if chloroform were abolished, the advance of surgery would be hastened rather than retarded, shows that the British are gradually approaching the point of view so long held in this country. Hedonal as an intravenous anesthetic is recommended when patients are in a critical condition resulting from cachexia, hemorrhage, nephritis, etc. Local anesthesia receives far too scanty consideration. It is scarcely mentioned in such operations as hemorrhoidectomy, thyroidectomy, herniotomy and tracheotomy. Most of the important operations are exceedingly well illustrated. Cushing's technic is followed quite generally in the chapter on cranial surgery. For the radical removal of glands of the neck, the old curved incision is employed, which begins in the submaxillary region, extends backward and upward across the upper portion of the sternomastoid, and downward through the posterior triangle along the anterior border of the trapezius muscle. This leaves an ugly scar in the upper part of the neck. Kocher's technic is followed in thyroid operations, except that general anesthesia is still recommended. Little space is devoted to thoracic surgery, the subject being dismissed with the usual description of the operations for acute and chronic empyema, and for drainage of the pericardium. Hernia is very well given and well illustrated, as are all of the operations on the gastro-intestinal tract. A number of pathologic illustrations are employed in the chapters dealing with carcinoma of the colon and rectum. In gall-bladder work a straight incision is recommended for the simpler cases, and the Bevan method of extension when more room is required. The operations on the male genital and urinary tracts are extensively given. On the whole, the book gives a clear presentation of the subjects with which it deals, but possesses no new features that are worthy of comment.

Anesthetics: Their Uses and Administration. By Dudley Wilmot Buxton, M.D., B.S., Administrator of Anesthetics in University College Hospital, London. Fifth Edition. Cloth. Price, $3 net. Pp. 477, with 84 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

This is essentially a manual dealing with the practical phases of surgical anesthesia. The discussions of the physiologic aspects of the question are almost entirely concerned with the more superficial phenomena associated with the action of anesthetic drugs. There is almost no mention of the really fundamental disturbances produced in the cell. Thus, there is no mention of such important generalizations as that of Meyer and Overton, concerning the relationship of the narcotic property of a drug to its partition coefficient between fat and water, or as that of Verworn in regard to the association of tissue asphyxia with narcosis. The book, therefore, again calls attention to the fact that there is no adequate presentation of what is already known about the theory of narcosis in any of the numerous works which claim to present what is termed the physiologic aspect of the subject. There are, however, many commendable features. The practical side of the administration of anesthetics is thoroughly covered. Like most Europeans, the author devotes far too much space and consideration to chloroform; but, on the other hand, it is encouraging to find as much consideration given to ether and nitrous oxid. The section on local analgesia seems a little brief, but nevertheless the subject is fairly well considered. There is an additional section on spinal analgesia and an interesting chapter on medicolegal aspects of the administration of anesthetics. One of the most interesting parts of the book is the first chapter, dealing with the historical aspect, in which due credit is given to the group of American pioneers in the application of sleep-producing drugs to surgical practice.

The Body and Its Defenses. By Frances Gulick Jewett. Cloth. Price 65 cents. Pp. 346, with illustrations. The Gulick Hygiene Series. Boston: Ginn & Co., 1914.

Good Health. By Frances Gulick Jewett. Cloth. Price 40 cents. Pp. 174, with illustrations. The Gulick Hygiene Series. Boston: Ginn & Co., 1914.

These two volumes belong to the Gulick Hygiene series, previously reviewed in The Journal. The first is intended for the elementary grades and discusses methods of personal health, what to do for the eyes, ears, teeth, finger nails, hair, etc., how to keep clean, how to get pure air and how to avoid the ills that come through violation of the laws of good health. The intention of the writer has been to write "a little book for a little child." It is simply written and freely illustrated, being divided into short chapters, each followed by a few questions intended to emphasize important points. The second book is intended for older children and deals with applied physiology as well as hygiene. The two have been adopted for use in the public schools of Kentucky, and a special edition prepared containing a supplement by the State Board of Health, which is perhaps the most unique feature of the two volumes. The apparent and close cooperation between the State Board of Health and the educational authorities is highly commendable. Figures from the State Bureau of Vital Statistics are freely quoted, showing the number of births and deaths and the number of deaths from preventable diseases in Kentucky since 1911. Special emphasis is laid on the fact that the greatest asset of the state is the health of its people, and an appeal is made to each child to assist in raising the health standard of the state to the highest possible point.

Reducing Weight Comfortably. The Dietetic Treatment of Obesity. By Prof. Gustav Gaertner, M.D. Cloth. Price, $1.50 net. Pp. 313. Philadelphia: J. B. Lippincott Company, 1914.

The author bases his practice on an experience with 2,000 cases of obesity. This experience has brought him to the employment of a diet based on the well-known principle that a reduction in the total quantity of food below the actual needs of the patient must lead to a reduction in body weight. The method depends on the careful use of the scales, with reference both to the weight of the patient and to the weighing of food. The author first subjects his patient to careful observation to determine the average difference in weight between the maximum and minimum of each day. Based on this, the diet is so regulated as to reduce the weight without encroaching on the minimum. In this way, the patients lose weight without feeling discomfort. The diet is then regulated according to a definite plan as to the amount of body weight to be lost. Details of the treatment have reference to the use of different articles of diet and of water, and also the effect of various forms of regimen. Exercise is used moderately but not to excess. The author recognizes the principle that exercise necessarily increases appetite, and hence renders it difficult to restrain the intake of food. The book is a rational and practical discussion of an important but neglected subject.

Fear and Conventionality. By Elsie Clews Parsons, Ph.D. Cloth. Price, $1.50 net. Pp. 239. New York: G. P. Putnam's Sons, 1914.

While not exactly within the field of medicine, this book can be read with profit by physicians, dealing as it does with the psychologic and evolutionary causes of fear and conventionality. The general thesis of the writer is that practically all of the conventions of modern civilization are based on or at least have their parallel in some similar, though often absurd, custom of primitive peoples. While somewhat destructive of one's own conventional ideas regarding good breeding and manners, the intellectual stimulus to be gained from reading the book is worth the risk.

Medicolegal

Power of Vice President to Contract for Medical Services

(James Sanatorium vs. Yadkin River Power Co. (N. C.), 83 S. E. R. 464)

The Supreme Court of North Carolina affirms a judgment in the plaintiff's favor for medical services rendered to one Flake, who was an employee of the defendant company. The court says that it was in evidence that Flake was taken to the hospital by the defendant's physician, who stated that he had done it by order of the defendant's vice president, and that the plaintiff would send its bill to the defendant, who would pay it. The next day the vice president called over the telephone, from the factory of the defendant, to the president of the plaintiff company, and inquired "How is my man, Flake, I sent you last night?" He further asked the details, and told Dr. James to "give him every possible attention and, if he needed any special care, to give him special nurses and he would see that there was no trouble about the money, and to send the bill to him, and the Yadkin River Power Company would pay it." Prior to that time the plaintiff had rendered medical services to a typhoid fever patient, at the request of the defendant's vice president and physician, who stated that the Yadkin River Power Company would pay the bill, and it was paid according to the evidence of both the plaintiff and the defendant.

The chief contention was that the office of vice president does not necessarily confer power to contract debts for the corporation. It is true enough that the power of a vice president depends, not on his title, for his function differs according to the by-laws or according to the use and practice of the particular company. In some railroad companies there are many vice presidents who have great authority. There are other companies in which the vice presidency is a mere ornamental position. No general rules can be laid down as to the power of a vice president to bind the company, which would arise as a presumption in the case of the president.

In this case there was evidence sufficient to go to the jury to establish the authority of the vice president to act for the company in cases of this kind. His calling up the president of the sanatorium company from the office of the defendant, stating to him that Flake had been sent there by his authority, making full inquiries about him, and directing the bill to be sent to him, saying that the defendant would pay it and asking for special attention to be given to Flake, together with the fact that Flake was also carried to the sanatorium by the salaried physician of the defendant, and the further fact that another patient had been sent there by the vice president, accompanied by the physician of the company, and that by their direction the bill had been sent to the defendant and paid by it—all these things were sufficient to submit to the jury the question as to the authority of the vice president in this case, and it would have been error to direct a non-suit on this evidence.

Opinions of Attending Physicians and Others as to Mental Capacity

(Bahl vs. Byal et al. (Ohio), 106 N. E. R. 766)

The Supreme Court of Ohio holds that it is not competent, in a proceeding to contest a will, for a witness to give an opinion as to whether the testator had capacity to make a will. But the physical and mental conditions from which it may be determined by the court and jury whether he had such capacity are facts which may be shown by manifestation of such conditions. And it is competent for the physician of a testator to express an opinion as to the actual condition of his patient's mind, founded on his study and observation of the testator while in professional attendance on him at the time and prior to the date of the will, and whether he was capable of comprehending large and complicated business propositions or the distribution of a large estate.

The court says that it is not doubted that the opinions of physicians touching questions of mental strength or weakness are competent to be given in evidence in cases in which those matters are in issue. The weight to be given the evidence in a particular case is to be determined by the jury, as the testimony of witnesses touching any other matter should be determined. Where the physician has had opportunity to observe mental conditions by reason of having acted through a sufficient period of time as medical attendant, it is proper for him to express an opinion on the actual condition of the patient's mind at the times, or during the period, in which he was so engaged. And where the grounds have been properly laid for a hypothetical question, a physician, who has properly qualified as an expert, may give his opinion as to the mental condition of the person referred to in the question under the circumstances stated therein. These principles are well recognized.

A physician, giving his opinion on the mental capacity of a testator, or other person, which is based on the actual knowledge which the physician has gained by personal contact with, and study of, such person as a patient, occupies a different relation to the matter than a physician who has no such knowledge, and who testifies in answer to hypothetical questions. The only sound theory on which the opinion of an expert is admitted at all is that he has the knowledge, training and experience with which to form a better opinion on a certain state of facts than one not so well equipped. Necessarily, the opinion of a physician, which has been formed by the slow and sure processes of time and responsibility in connection with the performance of professional duty to a patient, is more valuable than that of one who has not such advantages and gives his opinion from a hypothetical question. The line between strength and weakness in the mind is so elusive that it may well be doubted whether a stranger can be brought by descriptions of the mental manifestations of a particular individual into a position to make his testimony concerning it of great value, except in well-defined cases. There is an increasing loss of confidence in that class of expert testimony.

Malpractice Not Covered by Casualty Insurance

(May Creek Logging Co. vs. Pacific Coast Casualty Co. (Wash.), 144 Pac. R. 67)

The Supreme Court of Washington affirms a judgment rendered in favor of the defendant, which was sued by the plaintiff to recover $4,500 and costs, which the latter had had to pay because a physician and surgeon whom it had furnished to attend an injured employee had treated him so unskilfully and negligently that he was permanently crippled. The court says that the defendant had insured the plaintiff against loss and expense arising from claims or damages on account of bodily injury accidentally suffered by the prosecution of general logging operations, "and the various departments thereof, and dependent and connected operations and parts thereof." The plaintiff alleged that it was the custom of logging companies to deduct a hospital fee from the wages of each of their several employees, and use the fee in the payment of services to be rendered such employees as became sick or injured, and that the defendant knew of such custom, but the court cannot think that the facts in any way altered or modified the terms of the insurance. A demurrer to the plaintiff's complaint was properly sustained on the ground that the loss suffered by the plaintiff was not a loss covered by the conditions of the policy. The defendant's liability, of course, depended on the conditions of its policy. If it thereby undertook to answer for losses arising from claims of damages on account of the negligent failure of the plaintiff to perform a special contract wherein it undertook to furnish an employee with hospital, medical and surgical services, then it was liable to answer to the suit of the plaintiff; otherwise not. The court cannot think the policy bore this interpretation. Hospital, medical and surgical services were no part of the logging operations, and the injured employee while in the hospital was performing no service connected with the plaintiff's logging business.

Society Proceedings

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Dec. 14, 1914

DR. JAMES E. TALLEY in the Chair

Recent Changes in Our Concept of the Action of Digitalis

DR. H. C. WOOD, JR.: When given in physiologic dose, digitalis does not increase the blood pressure in either man or the lower animals. It is probable, however, that there is some constriction of the blood vessels, as is shown by the fact that when the slowing of the pulse is prevented, the pressure is increased, and it is probable also that the diuretic effect is due to changes in the caliber of the vessels. The slowing of the pulse, which is the most constant effect of digitalis, is, in healthy individuals, purely inhibitory. Stimulation of the vagus may produce heart block and other irregularities of rhythm. The slowing of the pulse is completely abolished by large doses of atropin. The muscular tone is not demonstrably affected after small doses, although it is possible that the largest therapeutic doses may increase it. The cardiac contractions are, however, enlarged. The effects in disease are often very different from those in health. In fever the vagus appears to be less than normally irritable, and digitalis does not slow the pulse. In chronic endocarditis the effects are different, according to whether the rhythm is normal or there is auricular fibrillation. In the latter condition, it will generally produce great slowing of the pulse. It is impossible from the present data to draw positive conclusions as to the mechanism of its action in this condition, but it is probably due to stimulation of inhibition and partly to diminished ventricular irritability, the result of better nutrition. In cases of endocarditis with normal rhythm, its effects are often much less marked. It is a mistake to give digitalis in all cases until the manifestation of toxic effect. Some conditions require larger doses to have any action, while others may be injured by full doses but benefited by small ones.

Clinical and Electrocardiographic Studies of the Action of Digitalis

DR. ALFRED E. COHN, New York: Investigations were made in patients having an early rather than an advanced stage of heart disease. The mechanism of their hearts was normal, they had no edema, and their blood pressure was within normal limits. The reduction in the rate of the heart is an effect of digitalis on which we rely, but one which we have not found constant in this type of case. Digitalis slows the sinus rhythm only in the group of hypodynamic hearts; to produce slowing is not a function of digitalis in therapeutic doses. An effect on conduction may be set down as a usual effect of giving the drug, apart from specific preexisting injury. We have noticed delayed conduction within forty-eight hours after the administration of the drug had been started. In many instances the auriculoventricular interval gradually lengthened during the succeeding three to five days, until partial heart block occurred. In some cases, however, block occurs with extreme abruptness. One arhythmia, practically unknown, the result of giving digitalis, is one in which none of the auricular beats are blocked. The auricles and ventricles continue to beat almost at the same time, but there is incomplete coordination between them. Another new sign in the electrocardiogram is an alteration in the size, shape and direction in the T-wave. The first change noted after the administration of digitalis is usually a diminution of the height of this wave, usually in the third lead first, and later in the second. The change may be noticed as early as twenty-four hours, and at the end of forty-eight hours the wave may have become iso-electric, or it may become diphasic. In some electrocardiograms, the T-wave for pathologic reasons is pointed downward. If digitalis is given, the direction of the T-wave during the action of the drug is pointed upward. While the causative factors in the change of the T-wave cannot be precisely explained, the inference is that there is an alteration in the contractile substance of the heart muscle. Two criteria appear, then, in electrocardiograms to indicate surely the fact that digitalis is acting on the heart: the first in the slight but definite lengthening in conduction; the second, the very curious alteration in the T-wave. Electrocardiographic evidence can be supplied to show that digitalis has an action during fever of a nature precisely similar to that already described in non-febrile patients. Possibly as an aid to contraction, much can be gained from the use of digitalis; but the expectation of obtaining an action on heart rate must be abandoned. There is, however, a group of febrile cases in which digitalis acts efficiently on rate. These in our experience have been patients showing auricular fibrillation or auricular flutter. Another topic long a subject of conflict is the relation of digitalis action to blood pressure. In the cases which we have studied, no alteration in pressure was found. Vascular effects, however, aside from changes in pressure, may be produced, and the untoward or beneficial nature of these require consideration. In the group of patients under consideration, no increase in diuresis takes place. In patients having edema, other factors are involved. That a specific effect on urinary output does not occur as the result of giving digitalis in the patients under discussion has an important bearing on the drug's action in edema. In connection with the mechanism of the action of digitalis, two possibilities have been much discussed; an action on the inhibitory mechanism and one on the heart muscle itself. Our studies lead us to believe that both views are partially right. So far as atropin may be taken to be a drug acting especially on the ends of the vagi, a release of the heart from a phase of digitalis action by its use indicates a nerve action of digitalis. So far as digitalis has other effects which atropin does not release, its effect on the T-wave, it may be inferred that it has an action directed more especially to muscle. Both effects can be observed at the same time.

NEW YORK NEUROLOGICAL SOCIETY

Meeting held Dec. 1, 1914

DR. E. G. ZABRISKIE in the Chair

Brain With Double Frontal Abscesses

DR. L. CASAMAJOR: The patient was a mechanic and inventor, aged 50, whose family history was negative. Between 20 and 30 he had several severe attacks of articular rheumatism, with heart complications. The patient had always been very active as a young man, and at one time was a long distance bicycle rider. Until about twenty years ago he used alcohol habitually and to excess, but for fifteen years preceding his death he had been a total abstainer. He smoked constantly and used chewing tobacco daily. During the past ten years he had worked very hard at his trade and had accomplished a great deal in a mechanical line. He took no recreation excepting a few days each summer, when he did some yacht racing.

The exact date of the onset of his present illness could not be fixed. He was in the habit of receiving osteopathic treatment for minor ailments, and was under the care of an osteopath when he came under observation, March 10, 1914. At that time he complained only of a slight frontal headache and of being unusually tired. He was slightly jaundiced. The pupils were contracted, reacting slowly. The tongue was heavily coated and the breath offensive. The temperature was normal; pulse, 60 and full. On his first day in the hospital he refused to stay in bed; he wished to go to business and insisted on smoking his pipe. On the following day he kept his bed and abstained from tobacco. He remained in his usual jovial mood, and his symptoms were such as one would expect in a case of catarrhal jaundice. His condition remained practically unchanged for four days, without improvement in appetite, appearance of tongue, etc., in spite of active purgation.

On the fifth day he was quite indifferent to his surroundings and very talkative. His headache had disappeared almost entirely, and he still complained of nothing. When left alone he talked and whistled, and was not at all disturbed when he soiled the bed by an involuntary defecation. His pulse remained slow, and the rectal temperature on the fifth day was 101 F. The urine was stained deeply with bile; it contained a trace of albumin; no sugar; there was a marked indican reaction and a few hyaline casts. No complete blood count was made, but a differential count showed 79 per cent. polynuclears. The stools were offensive and lighter in color than normal. The pupils remained contracted and sluggish, acting equally. The ears showed nothing abnormal, and there was no nasal discharge.

The patient remained in practically the same condition for another twenty-four hours, appearing indifferent when he was alone, but acting quite rational on being questioned. There was no paralysis and the reflexes were normal, excepting pupillary. His temperature, on the evening of the sixth day, was 101 F. in the rectum; pulse, 54; respirations, 18. At 8 a. m. on the seventh day after his admission, he suddenly developed a chill, the rectal temperature rose to 106 F., he became comatose, developed Cheyne-Stokes respiration and died in three hours.

The brain was removed; about half an ounce of fouling pus escaped through the right frontal lobe. Further ration showed a double frontal abscess, undoubtedly imary on the right side and extending through the corpus callosum into the left frontal lobe. No other abnormality was found. The pus contained the *Bacillus pyocyaneus.*

Some Psychologic Studies on the Nature and Pathogenesis of Epilepsy

Dr. L. Pierce Clark: The potential epileptic, as a rule, possesses a supernormal output of energy which is constant and fairly productive of good developmental results as far as the organic makeup is concerned. There is a poorly repressed or thinly inhibited outcropping of the egotistic tendencies. These characteristics of a pathologic self-love are far beyond the bounds of a pure physiologic variation. As a rule, the potential epileptic is not well adapted to his environment and cannot easily change it. He cooperates badly in social and economic settings. For the most part he is frank; the subtleties of mind are not his; on the contrary, he has a simple, childlike pattern of emotional life. He never has the scruples or doubts of the obsessive neurotic; not being hindered with the inhibitions and prohibitions of the latter class, he is often permitted to become engrossed with the lower animal instincts and passions. With the inhibitions reduced and with an overemphasized estimate of his own importance and ability, the potential epileptic finds himself in constant conflict with the outside world. While the normal individual has his infantile struggle with reality and has made the life compromise, the potential epileptic youth keeps up the baffling struggle; hence his deep-rooted dislike and even hate of the outside world. Individuals who possess the epileptic constitution lack real general interests. The libido is rigid, self-centered and crude. There are small religious promptings; the meaning and ends of life rarely engross the potential epileptic. His friendships are perfunctory: the egotistic traits prevent a free range of emotional expression. A parental attachment of the potential epileptic to his own sex is the rule, and this is especially marked in girls. The love fixation to the mother in the majority is prominent more or less throughout life. The potential epileptic's attitude toward the opposite sex is very significant: it rarely possesses the higher love attributes and more frequently evolves little beyond the simplest or grossest sexual demands. That fact alone, independent of the superadded convulsive disorder, makes marriage among epileptics almost invariably a failure.

The fit serves as an unconscious gratification to the libido. By dream analysis, the analysis of man [illegible] inor attac [illegible] nd a few major fits, this unconscious s [illegible] 's ofte [illegible] k sexual outlet; in others it is dis [illegible] f ac [illegible] pleasure affects that have been lo [illegible] ulati [illegible] essential motive in all genuine epileptic fits would seem to be at bottom unconscious striving on the part of the epileptic to return to the intra-uterine life in the mother in a state of perfect peace and *Allmacht,* with its insistent urge in the fits, and is conditioned on the stage of libido fixation in infancy, which occasionally may be so advanced as to reach into homosexuality but rarely into heterosexual life.

The seizure movements are point for point identical with the impulsive movements of the fetus and the period of earliest infancy. In the normally developing child, these muscular movements are slowly but definitely repressed as the will and the conscious life unfold: in the epileptic the impulsive movements of earliest infancy are released from conscious and voluntary control, and they reenact the fetal and infantile purposes of satisfaction of that period.

DISCUSSION

Dr. Smith Ely Jelliffe: The *Mutterleibs Phantasie* is encountered in various phenomena in addition to the epilepsies, such as in various conversions and compulsive phenomena. It would be of practical interest in the analyses of the epileptic phenomena to see just how the individual has evolved the universally present Oedipus situation through the individual muscle erotic gratification.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Seventy-Seventh Annual Meeting, held at Asheville, N. C., Dec. 15-17, 1914

(Concluded from page 367)

Diaphragmatic Hernia

Dr. John D. S. Davis, Birmingham: I have seen five cases of traumatic diaphragmatic hernia. When an operation is decided on, the question arises, which is the best route to follow. The thoracic route presents great advantages. It has one decided merit in injuries of the chest, in that the external wound itself serves as a guide. The chest is to be opened at the site of the wound and the course of the wound followed. Further, this is the most direct route. It affords space to reduce the hernia if one is found to exist and for enlarging the diaphragmatic wound and treating the hernia. There are two objections to thoracotomy. The first is the danger of pneumothorax; second, the route does not permit exploration of the peritoneum and its contents. In the cases in which it is important to ascertain what viscera, if any, have been wounded, an abdominal section is necessary. Each case should be approached according to its individual features, but the superiority of the transpleural route in the treatment of thoracico-abdominal wounds seems to be indisputably established. I recommend as a rule Cranwell's trapdoor opening with the base above. The resection of one rib is often sufficient, and it is seldom that the incision needs to extend above the eighth rib in front or the seventh behind.

Treatment of Angiomata by Injection of Boiling Water (Wyeth Method)

Dr. Francis Reder, St. Louis: In a series of 26 cases subjected to this treatment I have had no failures. In every instance the results have been gratifying. Most of the cases presented the lesion on the face and scalp. Four patients presented angiomata on the tongue, ranging from the size of a filbert to that of an English walnut. One patient presented the lesion on the left gluteal region as large as a cocoanut; another patient presented a fusiform angiomatous growth on the right middle finger between the second phalangeal articulation and the knuckle. This tumor caused great pain. The course of an angioma successfully injected is one of gradual diminution, the greatest progress ing made from the second to the third week. A tumor ize [illegible] 's egg usually requires six or eight weeks [illegible] ance. If the injection has been free from any accident, such as cicatrization following sloughing, the site that once harbored the angioma will appear healthy and quite normal.

The Bulgaria Bacillus in Cystitis with Alkaline Urine

DR. FRANCIS R. HAGNER, Washington, D. C.: A patient gave a history of chills, fever, recurrent attacks of urinary frequency and tenesmus extending over a period of three weeks, with cloudy, alkaline urine. Cystoscopic examination showed a bright velvety area just behind the right ureteral orifice; roentgenogram negative for calculus; the possibility of tuberculosis of the right kidney was considered, and several urinary examinations failed to show the bacilli. Guinea-pigs inoculated continued to gain weight. The right kidney urine was strongly alkaline and contained much pus and some blood, while the urine from the left was faintly alkaline, containing but a small amount of pus. Instillations into the bladder improved the patient's condition, but the urine from the right kidney continued alkaline and the pus continued to be present in the urine. I then injected the kidney with the *bulgaricus Bacillus*. Two tablets were dissolved in 10 c.c. of sterile water and injected into the kidney pelvis through the ureter catheter. The patient had no trouble for thirty-six hours, when he had quite a sharp chill, temperature rising to 103.5 F. but becoming normal in twelve hours. The day following the injection the patient's urine was acid, and although I made two more injections into the bladder, no more treatment was directed to the kidney. The patient has now been away from the hospital two weeks, his urine remaining clear, acid, and free from pus.

Massive Umbilical and Ventral Hernias

DR. ALEXIUS MCGLANNAN, Baltimore: In a series of 1900 non-strangulated inguinal hernias there were four deaths, a mortality of a little over .2 per cent., while in a series of 197 umbilical and ventral hernias operated on by the same group of surgeons during the same periods of time, there were six deaths, about 3 per cent. mortality. In this latter series there were forty-six massive hernias with three deaths, about 6 per cent. In a second series of twenty-six cases there were four strangulated hernias. Two of these patients died. Of the twenty-two non-strangulated cases, one patient died on the second day from dilatation of the heart. Sixteen patients were handicapped by lesions other than the hernia. There were six heart lesions, six renal, two of arteriosclerosis, and two of obesity.

Surgical Treatment of Perforating Duodenal Ulcer

DR. JOHN YOUNG BROWN, St. Louis: A woman aged 48, entered the hospital, March 9, 1914. A diagnosis of benign pyloric obstruction was made. Early in the morning following her admission she became decidedly worse and an immediate operation was done. The abdomen was opened through the right rectus muscle. In the region of the gall-bladder and duodenum there was marked localized peritonitis. Separating the adhesions of the gall-bladder to the duodenum a perforation the size of a lead pencil was located. It was closed immediately and reinforced with an omental graft. Posterior gastroenterostomy was out of the question and instead we did a jejunostomy with the hope of building her up by liquid feeding. She recovered nicely from this operation, and under liquid feeding she gained 12 pounds in three weeks.

The second operation consisted in opening the abdomen, closing the jejunal fistula and doing a posterior gastroenterostomy. From this operation she recovered nicely, left the hospital in two weeks, and is now in perfect health, having gained at least 20 pounds.

Use of Skin Grafts in the Ambulatory Treatment of Ulcers

DR. JOHN S. DAVIS, Baltimore: From the results obtained in the first fifty cases in which grafts have been used in the ambulatory treatment of ulcers, I feel that we have added to our armamentarium a method of treatment which has hitherto been used only on patients resident in the hospital. In other words, the successful use of grafts in the outpatient department will make for hospital economy and will also hasten the return of many patients to full wage-earning capacity.

Passive Congestion of Liver Simulating Abdominal Tumor

DR. CHARLES R. ROBINS, Richmond, Va: A woman, 42 years of age, suffered with right upper abdominal distress for ten years, during which time she had been getting steadily worse. She had not been able to lie on this side for five months without its beginning to thump. There was marked local pain and tenderness. Six weeks previous to admission to the hospital, she had been taken with a fever, during which she had two decided chills, and became jaundiced. The fever and jaundice gradually cleared up. She had a similar attack six months previously. Since her last attack her appetite had not been good. She suffered from nausea and could not take solid food or cold drinks. Her abdomen had been swollen a great deal but had subsided. In the upper abdomen to the right of the median line and coming apparently from the under surface of the liver was a globular tumor about the size of a grape fruit, which could easily be felt and which moved with respiration. It was quite tender and tense and gave the sensation of fluid in a tight sac. Owing to the large abdomen, physical signs were not distinctly elicited. The Wassermann test, examinations of blood and urine were negative. On opening the abdomen the tumor was found to be the dark swollen and congested right lobe of the liver which was prolapsed and rotated so that it projected into the abdomen, the edge of the liver being rounded off by the swelling. The liver had a slight nutmeg appearance. A section of the liver was examined microscopically and showed marked fatty degeneration with some cirrhosis and round cell infiltration. A markedly inflamed appendix was found and removed at operation.

Hemangio-Endothelio-Blastoma of Stomach

DR. J. GARLAND SHERRILL and DR. F. S. GRAVES, Louisville: We had a case of this very rare affection in a woman of 31. In 1907 she fell striking her epigastrium against the corner of a table. Later she began to complain of loss of appetite, nausea, symptoms of indigestion and epigastric discomfort. Attacks occurred especially at night with regurgitation of food and eructations of salty material. She vomited blood once or twice. There was more or less constant pain in the abdomen, which was relieved by eating. Marked anemia developed with loss of flesh and a peculiar cachexia. When examined at this time she was tender over the region of the stomach and a palpable thickening could be felt in the epigastrium. This mass moved up and down with respiration. At times it could not be felt. Blood examination at this time was negative to malaria; 3,500,000 red cells; 7,000 leukocytes; hemoglobin 30 per cent. A diagnosis of gastric ulcer was made. Rest in bed, carefully selected diet and treatment of the ulcer brought prompt improvement. Subsequently this improvement seemed to be hastened by antisyphilitic treatment. She came under observation once or twice during the next five years, but was at no time under constant supervision. Her condition remained fair, but the mass persisted, sometimes palpable, sometimes not, always following the respiratory movements and also quite freely movable. About two years ago she had an attack at night, when she felt weak, yawning, with impaired vision and a slow feeble pulse. Within thirty-six hours the stools were black and blood was detected in them. Her anemia improved at times and then recurred. The lump in the abdomen seemed to enlarge and was more tender at her menstrual periods. Wassermann test was negative. A diagnosis of gastric ulcer with a growth, probably a tumor, was made, although the possibility of a floating kidney was considered. Abdominal section was done Oct. 5, 1914. A reniform mass growing from the greater curvature of the stomach near the pylorus and covered by the greater omentum presented to view. This mass was mottled, purplish in color, and had a rather broad attachment to the stomach. It moved freely with that organ, having no other attachments. A portion of the stomach about

4 inches in length along the convex border and 2½ inches along the concave border was removed, together with the mass and a portion of the upper part of the duodenum including the pylorus, and the gastroduodenostomy was completed in the usual manner. The pathologic report on the tumor was hemangio-endothelio-blastoma.

Cure of Cancer of Uterus by Curetting for Diagnosis

Dr. Herman J. Boldt, New York City: A woman, 47 years of age, had been advised to have a hysterectomy done for cancer. The diagnosis was taken from scrapings. Not being able to find, either subjectively or objectively, the slightest evidence at that time for suspecting cancer of the corpus uteri, I proposed another curetting for diagnosis. All scrapings were found to be normal endometrium. Some time after this, two slides with the scrapings from which the diagnosis of this case had been based were given to me for inspection. They showed advanced adenocarcinoma. A number of authoritative pathologists examined these and the sections from the scrapings taken by me. All who examined the scrapings for me expressed as their opinion that it was more likely that an accidental mix-up in the scrapings had occurred than that they came from the same patient. Opposed to this is the statement of the pathologist that this could not have taken place. This would then be the first and only case in which an advanced adenocarcinoma has been cured by a curetting for diagnosis. A second case was that of a woman of 36 in whom the examination of scrapings removed by curetting, done during the course of other operations, on November 7, without suspicion of carcinoma being present, showed distinct early adenocarcinoma. When the uterus was extirpated two weeks later, the most painstaking examination of serial sections of all parts of the uterine mucosa failed to show cancer.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

January, LXXI, No. 1, pp. 1-208

1 Dynamics of Female Pelvis; Its Evolution and Architecture with Respect to Function. E. A. Schumann, Philadelphia.
2 Heteroplasia in Carcinoma Uteri. L. W. Strong, New York.
3 *Urinary Catalase in Health and Disease. M. Kahn and C. J. Brim, New York.
4 New Vaginal Wire Speculum. H. J. Hartz, Philadelphia.
5 Clinical Observations in Europe. P. Findley, Omaha.
6 Gangrene of Limbs During Puerperium. C. G. Cumston, Geneva, Switzerland.
7 Introspection in Gynecology. F. A. Rhodes, Pittsburgh.
8 *Iodin as Sterilizing Agent in Supravaginal Hysterectomy—With Remarks on Morbidity. I. S. Stone, Washington, D. C.
9 *Torsion of Ovarian Cysts. Report of Cases. K. I. Sanes, Pittsburgh.
10 More Common Gynecologic Conditions Necessitating Operation. W. H. Humiston, Cleveland.
11 Operative Findings in Twelve Cases of Chronic Intestinal Stasis. W. S. Bainbridge, New York.
12 *Report of all Abdominal Cesarean Operations (571) Performed in Service of Lying-In Hospital, New York. A. B. Davis, New York.

3. **Urinary Catalase in Health and Disease.**—The urines of normal individuals and patients suffering from various diseases was examined for catalase by Kahn and Brim in order to observe whether there was any constancy in the presence or absence of catalase as regards any specific disease. Traces of catalase were found in normal urine that had been freshly voided. In the urines of a number of patients suffering with various ailments, the catalase content varied. It was found especially high in urines that reacted positively for blood, bile or acetone. Quite a number of urines of patients suffering from cancer were tested for catalase, and no variations from the normal were observed, except when bile, blood or acetone was present. Cases of lymphosarcoma and Hodgkin's disease gave very high catalase content in the urine. In severe diabetes, patients with acidosis eliminated very largely increased amounts of catalase in the urine; on the other hand, diabetics who had no acetonuria showed no variation from the normal in the amount of urinary catalase. Typhoid patients and others with general septic infections excreted increased amounts of catalase; more if bile, acetone or blood was present.

8. Abstracted in The Journal, June 27, 1914, p. 2048.

9. Abstracted in The Journal, Oct. 10, 1914, p. 1320.

12. **Abdominal Cesarean Operations.**—In 571 cesarean deliveries analyzed by Davis, 577 children were born and sixty-one mothers died. Sixty-nine children were either stillborn or died before leaving the hospital, a fetal mortality of 12 per cent. Twenty-three, or 4 per cent., were stillborn. From the 61 mothers who died following cesarean section, 62 children were delivered. Forty-four children lived, 11 died, and 7 were stillborn. Eclampsia and toxemia of pregnancy were the indications for cesarean section in 35 cases; 22, or 63 per cent., of the mothers recovered; 13, or 37 per cent., died. From these 35 women, 37 children were born, 26, or 70 per cent., of these children lived. Eleven children, or 30 per cent., were either stillborn or died. Four were stillborn. Seven died. Period of gestation in these 35 cases: 14 at the tenth month, 3 at the nine and one-half month, 12 at the ninth month, 2 at the eight and one-half month, 1 at the eighth month, 1 at the seven and one-half month, 2 at the seventh month.

Placenta praevia was the main indication in 21 cases; 2 these mothers died from sepsis; 21 children were born, children lived, 4 children died, and 3 children were stillbo The fetal mortality was due to prematurity. There wer cases of accidental hemorrhage, the mothers and 1 ch lived. One child was stillborn; 1 child was premature a died in a few hours. Seventy-eight women have b delivered more than once by cesarean section; 60 the seco time, 15 the third time, 1 the fourth time, 1 the fifth time, c the sixth time. Rupture of the uterus in labor subsequ to cesarean section occurred in 6 cases. Three mothers di Three mothers recovered. Two children lived. In these cases the children were in the uterus and alive and w delivered by cesarean section.

The main indication for cesarean section was some fo of contracted pelvis or deformity of the spinal column in 4 or 79 per cent., of the cases. There were 9 cases of so neoplasm occluding the pelvis as the main indication f cesarean section; and 9 cases following some form of su pension of the uterus required a cesarean operation. In cases an unduly large child was the indication. There we also 7 cases of post mortem cesarean section. Two childr were delivered alive. One lived six days. The others liv

American Journal of Public Health, Boston

December, IV, No. 12, pp. 1127-1256

13 Modern Aspect of Tuberculosis Problem in Rural Communities a Duty of Health Officers. S. A. Knopf, New York.
14 Investigation of *Uncinaria Infection* at Ping Hsiang Colliery, C tral China. A. C. Reed.
15 Sanitation in Brazil. E. Stuart, Santos, Brazil.
16 Improved (Durham) Fermentation Tube. I. C. Hall, Berkel Cal.
17 Comparison Between Twenty Degree and Thirty-Seven Deg Plate Counts for Enumerating Bacteria in Water. J. B. Thom and E. A. Sandman, *Baltimore.*
18 Supervision of Communicable Diseases in Smaller *Municipaliti* H. W. Hill.
19 Quequechan River Improvement, Fall River. F. H. Fay, F River, Mass.

American Journal of Roentgenology, Detroit

October, I, No. 12, pp. 449-495

20 Roentgen Examination of Sphenoid Sinus. D. R. Bowen, Phil delphia.
21 *Advanced Roentgen Technic in Diagnosis of Esophageal Lesion W. H. Stewart, New York.
22 *Interpretation of Pericolic Membranes. E. H. Skinner, Kans City, Mo.

21. Abstracted in The Journal, Oct. 10, 1914, p. 1322.

22. Abstracted in The Journal, Oct. 3, 1914, p. 1227.

Boston Medical and Surgical Journal

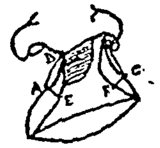
January 14, CLXXII, No. 2, pp. 41-80

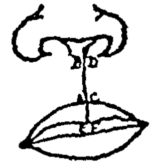
23 *Ovarian Transplantation: Report of Case of Implantation into Uterus with Resulting Pregnancy. M. Storer, Boston.
24 Study of Epilepsy of Dostojewsky. L. P. Clark, New York.
25 Occupational Disease and Public Health. D. B. Armstrong, New York.
26 *Modification of Technic for Hare-Lip Operation. W. E. Ladd, Boston.

23. **Ovarian Transplantation.**—In 1901 both tubes and the left ovary were removed from Storer's patient for an acute gonorrheal salpingitis of a month's duration. April 12, 1904, the remaining right ovary was freed and proved to be riddled with cysts, especially in its right half. The tubal stumps were about half an inch long. The right tubal stump was divided downward until the uterine cavity was laid well open. The ovary was then bisected from above downward, carrying the incision well down into the broad ligament, so that each half of the ovary retained at least some of its original blood supply. The cut surface of the distal half was then closed with catgut, leaving that half to function in case the other half died. The proximal segment of the ovary was then introduced into the cut in the uterine wall and lightly anchored in place with fine catgut, in such a way that most of its cortex projected into the uterine cavity. The uterine wall was then brought together over it and its pedicle, in which there was a fairly good sized artery, with deep and superficial layers of catgut. The pedicle was sufficiently long not to pull the fundus over to the right at all. A chronically diseased appendix was removed.

A month after the operation the patient menstruated in perfect comfort, more so than for three years. Storer saw her again in January, 1905. She had been menstruating regularly but for the last few months with increasing pain, and finding a mass to the right of the uterus, he opened her again and removed a shell representing the degenerated remnants of the piece of ovary left *in situ* and a peritoneal cyst the size of a child's fist. Storer examined the seat of the transplanted ovary with much care but could find nothing abnormal nor any trace of its pedicle, which may have been lost in the many adhesions present. She made a good recovery but did not menstruate for four months. She was then put on various emmenagogues and on May 25 flowed one day. In June, July and August she flowed normally. November 4 her physician wrote that she was pregnant. This putative pregnancy was sixteen months after the transplantation. Everything went as should a normal pregnancy till December 12, three and a half months after the last menstruation, when she passed with some hemorrhage a mass of detritus and the uterus rapidly decreased in size. Menstruation stopped entirely February, 1909; in May she was the picture of health but a nervous wreck and her life a torment, with hot flashes, eye ache and other symptoms of the premature menopause. Hysterectomy was done in February, 1911, in a western city and she died thirty-six hours later of a streptococcus infection.

26. **New Technic for Hare-Lip Operation.**—Ladd uses two pairs of clamps made on a suitable angle with fine teeth to prevent the skin or mucous membrane from slipping, and a slit for the introduction of a small knife to make the incision. The knife used is made double-edged like a Catlin, only very small and thin. These instruments are used in conjunction with an ordinary small pair of sharp-pointed metal dividers. The procedure of the operation is as follows: After the alveolar process has been restored in the usual manner, the desired height of the lip, minus the width of the vermillion border is determined with the dividers. This distance is then marked off on either side of the lip by pricking the lip with the sharp ends of the dividers at the points which are to form the lines of the incision. The lip and cheek are then freed from the alveolar process and superior maxilla on both sides until the fissure can be drawn together without tension. The clamps are then applied with the angles of the slits at the points A and C and the slits directed toward the points B and D. The knife is now introduced into the slit in the clamp and carried upward to the nose and downward through the border of the lip, making the incisions B A E and D C F. The clamps may now be removed and reapplied out toward the angle of the mouth to control hemorrhage. The edges of the incisions, which of necessity must be clean incisions of equal length, and consequently fitting each other, can now be easily approximated, bringing the points B to D, D to C and E to F. This is done with one row of interrupted silk stitches, including all layers, but the skin tied inside, and another row of superficial approximation stitches of the same material, including the skin only, and tied outside.





Illinois Medical Journal, Chicago

January, XXVII, No. 1, pp. 1-80

27 Joint-Bodies from Within and from Without Present in Articulations Otherwise Apparently Normal. A. P. Heineck, Chicago.
28 Hyperthyroidosis. A. A. O'Neill, Chicago.
29 Goiter: Its Prevalence in Chicago. E. T. Olsen, Chicago.
30 Surgical Considerations of Thyroid. J. B. Haeberlin, Chicago.
31 Effects of Goiter and Results of Removal on Circulatory System. E. P. Sloan, Bloomington.
32 West Intranasal Partial Resection of Tear Sac for Dacryocystitis, Dacryostenosis, Phlegmon or Epiphora. J. S. Clark, Freeport.
33 Family Physician of Future. E. A. Cook, Alton.
34 Clinical Significance of Blood-Pressure and Its Relation to Longevity. A. L. Brittin, Athens.
35 Diagnosis of Intracranial Complications in Diseases of Middle Ear and Accessory Sinuses of Nose. J. C. Beck, Chicago.
36 Roentgen Ray Diagnosis. H. W. Grote, Bloomington.
37 Care and Treatment of Compound Infected Fractures. R. J. Bunch, Table Grove.
38 Indications for Use of Pituitary Extract. Report of Cases. H. L. Howell, Bloomington.
39 Common Causes of Slow and Difficult Labor. E. L. Brown, Bloomington.

Journal of Abnormal Psychology, Boston

December-January, IX, No. 5, pp. 297-368

40 Psychologic Feature of Precipitating Causes in Psychoses and Its Relation to Art. J. T. MacCurdy, New York.
41 Artificial Dreams and Lying. A. A. Brill, New York.
42 Psychopathology of Family. L. E. Emerson, Boston.
43 Few Dream Analyses. M. Solomon, Chicago.

Journal of Biological Chemistry, Baltimore

December, XIX, No. 4, pp. 445-538

44 *Catalytic Reactions of Blood. W. G. Lyle, L. J. Curtman and J. T. W. Marshall, New York.
45 Enzymes of Aspergillus Terricola. F. M. Scales, Washington, D.C.
46 *Studies in Endogenous Uric Acid Metabolism. G. W. Raiziss, H. Dubin and A. I. Ringer, Philadelphia.
47 Excretion of Creatinin by Human Individuals on Prolonged Creatin-Free Diet. A. I. Ringer and G. W. Raiziss, Philadelphia.
48 Effect of Acid on Permeability. W. J. V. Osterhout, Boston.
49 Solubility of Oxygen in Serum of Limulus Polyphemus L. and in Solutions of Pure Limulus Hemocyanin. C. L. Alsberg and W. M. Clark, Woods Hole, Mass.
50 Coagulation of Albumen by Pressure. P. W. Bridgman, Cambridge, Mass.
51 Distribution of Arsenic in Human Body. F. P. Underhill, New Haven, Conn.
52 Antagonism Between Acids and Salts. W. J. V. Osterhout, Boston.
53 *Estimation of Fat in Feces. F. C. Gephart and F. A. Csonka, New York.

44. **Catalytic Reactions of Blood.**—An investigation was made by Lyle, Curtman and Marshall of the chief factors involved in the benzidin test for occult blood. Their results with reagents covering a wide range of concentrations of benzidin acetic acid, and hydrogen dioxid, show that the sensitivity of the test was greatly influenced by the relative concentrations of these substances. Dilute solutions of benzidin are exceedingly sensitive to pure aqueous solutions of blood, and with these reagents, under the most favorable conditions, the authors were able to obtain decided tests with 1 c.c. of blood solution of a concentration 1 to 5 million. These reagents, however, are easily affected by inhibiting substances. By increasing the concentration of benzidin, the reagent becomes more resistant to inhibitors, but fails to

respond to the more dilute aqueous solutions of blood. The acetic acid serves merely to hold the benzidin in solution; an excess diminishes the delicacy of the reagent by increasing the speed of fading.

The hydrogen dioxid functions chiefly in two ways: First, it supplies the oxygen necessary for the reaction; second, it bleaches the blue color. Although a moderate excess of dioxid accelerates the reaction, it interferes with the delicacy of the test by increasing the speed of fading. The concentration of the hydrogen dioxid should be reduced to the minimum compatible with the production of a blue color which will reach its maximum intensity within five or six minutes. To obtain consistent results, water redistilled from glass should be used exclusively, and controls should invariably be made. It is imperative that the hydrogen dioxid be added last.

46. **Studies in Endogenous Uric Acid Metabolism.**—The uric acid elimination of ten individuals was studied by Raiziss, Dubin and Ringer. It was found that on a vegetable (meat-free) diet the uric acid output was considerably lower than was previously reported in the literature. It was also found that different individuals, under the same conditions of diet and rest, eliminate practically the same amount of uric acid per day. Work and high protein intake cause an increase in uric acid elimination. In changing the diet from a mixed to a vegetable and meat-free diet, at least a week must be allowed before the uric acid output will reach a constant level. The output during the first few days is higher, in all probability, because of an elimination of accumulated purin in the tissues of the body.

On placing two individuals on a practically nitrogen-free diet, which was at the same time strictly nuclein-free, after a vegetable diet period, the uric acid elimination dropped to about half of what it was on the vegetable diet (0.040 gm. per day). On giving milk, eggs and zwieback to the extent of 12 gm. of nitrogen per day to one of these, immediately following the nitrogen-free diet, the uric acid output rose but very slightly (maximum of 0.058 gm. per day). But when the vegetable diet was resumed, the uric acid nitrogen elimination rose again to its former level of 0.104 gm. per day. These findings suggest the possibility that the true endogenous uric acid output is really much smaller than has been found heretofore, and that in order to obtain it, the subject must be kept for a long time on a strictly purin-free diet and in a condition of absolute rest.

53. **Estimation of Fat in Feces.**—The steps of the method proposed by Gephart and Csonka may be summarized as follows: Weigh out finely powdered or well mixed moist sample. Saponify with KOH in alcohol (4 gm. of stick KOH and 20 c.c. of 95 per cent. alcohol). Dilute with 50 c.c. of water and acidify with HCl (20 c.c. of 20 per cent. in 5 c.c. portions). Shake out with ether and wash ether extract. Distill off ether and dry fatty acids. Take up with petroleum ether, filter and titrate with N/10 alcoholic KOH.

Calculation: $\frac{\text{c.c. N/10} \times 0.0297}{\text{Weight of substance taken}} \times 100$-per cent. tristearin.

Lancet-Clinic, Cincinnati

January 9, CXIII, No. 2, pp. 27-54

54 Relation of Focal Infection to and Bacteriology of Arthritis. E. C. Rosenow, Chicago.
55 Distinctive Advances in Orthopedic Surgery, Review of Recent Literature. R. B. Cofield, Cincinnati.
56 Hysterectomy from Viewpoint of General Surgeon. W. D. Haines, Cincinnati.
57 *Relation of Gastro-Intestinal Tract to Joint Disturbance and Value of Eliminative Treatment. W. A. Mowry, French Lick, Ind.

57. Abstracted in The Journal, Nov. 21, 1914, p. 1877.

Medical Record, New York

January 16, LXXXVII, No. 3, pp. 85-126

58 Scientific Knowledge Logically Applied to Acute Gonorrhea in Male Urethra. G. S. Peterkin, Seattle, Wash.
59 Vaccines in Relation to Mouth Infection. J. Head, Philadelphia.
60 *Are We Getting Proper Value from Our Plant and Expenditure for Tuberculous? E. S. McSweeny, Castleton Corners, Staten Island.
61 Occupational Factor in Diseases of Women. A. De Roulet, Chicago.
62 Some Ocular Manifestations of Aural Disturbances and Their Interpretation. J. A. Hagemann, Pittsburgh.
63 *Successful Use of Emetine in Control of Hemorrhage Following Nasopharyngeal Operations. J. Weinstein, New York.
64 Three-Bladed Uterine Curette. P. Romeo, Kansas City, Kan.

60. **Are We Getting Proper Value from Our Plant and Expenditure for Tuberculous?**—McSweeny's answer to the question is "No." He calls attention to the present state of affairs: An enormous number of tuberculous patients of all kinds and stages of disease and an annual expenditure on them of millions of dollars. Tuberculosis institutions bear all sorts of names and allege all sorts of objects, practically all house a medical and social hodge podge that bears small, if any, relation to the professions of their conductors. Anyone who can be proved to have a tuberculous or possibly tuberculous lesion, in he goes with the rest, without reference to the probable results. The highest type of case sets the standard, and the expenditure is the same for all. This McSweeny condemns.

The following classification and program he holds is the only one by which plant and expenditure can be made to yield its full value: 1. Cases of criminality, insanity, epilepsy, feeble mind, old age, permanent disability of other origin, alcoholism and vagrancy, complicated by tuberculosis, should not only not be treated in view of it alone, but the primary condition should be considered first and the tuberculosis regarded as a complication. This implies tuberculosis departments in institutions for these classes. 2. Cases of chronic disability, due to pulmonary impairment of tuberculous origin, should be kept in tuberculosis homes with infirmary service, to be retained there until death. 3. Cases of chronic tuberculosis without disablement should not be treated at all. Whatever the stage anatomically is immaterial. 4. There is among the many cases of tuberculosis a large fraction, early and late, who require treatment for their disease for varying, often long, periods, and are entitled to the best treatment that medical science knows, at the public expense, just as much as does the patient suffering from any other disease or injury; their interests shall not be compromised by the means apportioned being frittered away in a wholly illogical fashion; there are many kinds of tuberculosis, and we should not rob the patient who requires and will get results from treatment for the sake of those who will not, any more than we would hesitate to spend money on, or would take any less care of, or use any less effort to relieve, a case of sciatica, because there happened to be plenty of paralyzed persons to look after according to other standards. For those persons, that is, those definitely ill from tuberculosis, in an acute condition, including exacerbations and terminal stages in chronics, not comprehended in the previous exclusions, and for tuberculous persons suffering from other acute conditions, the tuberculosis sanatorium-hospitals and hospital-sanatoriums should be reserved. McSweeny believes that the cause of the present state of affairs is, first, the unfortunate tendency of physicians to regard the whole question of the classification of tuberculosis cases as settled when they tag the patient first, second or third stage, forgetting that other classifications are often more important, and second, of the artificial element in the antituberculosis propaganda now so wide-spread.

63. **Use of Emetin in Control of Hemorrhage Following Nasopharyngeal Operations.**—Twelve cases in which emetin was successfully employed to control or prevent hemorrhage during and after operations on the nose and throat are cited by Weinstein. In each instance ½ grain emetin hydrochlorid was given hypodermatically.

Michigan State Medical Society Journal, Grand Rapids

January, XIV, No. 1, pp. 1-74

65 Some Impressions of Work in London. C. H. Baker, Bay City.
66 Case of "Squirrel Plague" Conjunctivitis in Man. D. T. Vail, Cincinnati.
67 Inferior Turbinate; Its Flap Resection to Reduce it When Obstructive. O. T. Freer, Chicago.
68 Rhinitis—Acute and Chronic. L. J. Goux, Detroit.
69 Physiologic Physics in Relation to Eye and Ear. A. F. Burdick, Lansing.

70 Conservation of Vision. E. W. E. Patterson, Grand Rapids.
71 Bacteriology and Bacteriotherapy of Upper Air Passages. A. Odell, Detroit.
72 Ear Complications in Infections from Zymotic Fevers. G. A. Bulson, Detroit.
73 Hemorrhage from Ear. W. E. Newark, Charlotte.
74 Aural Conditions Following Contagious Disease. J. M. Robb, Detroit.
75 Intranasal and Pharyngeal Infections in Their Relation to Eye and Ear. E. P. Wilbur, Kalamazoo.
76 Acute and Chronic Sinusitis of Nasal and Pharyngeal Origin. F. N. Smith, Grand Rapids, Mich.
77 Some Points in Differential Diagnosis of Cerebellar Abscess and Cerebellar Lues. R. B. Canfield, Ann Arbor.
78 Osteitis Fibrosa. Report of Case. J. Van Zwaluwenburg, Ann Arbor.
79 Paraplegia Dolorosa Terminated by Aplastic Anemia—Anemic Changes in Spinal Cord. J. W. Sherrick, Ann Arbor.
80 Case of Myelogenous Leukemia Treated with Benzol and Roentgen-Ray. H. B. Schmidt, Ann Arbor.
81 Resection of Gasserian Ganglion for Trifacial Neuralgia Complicated with Facial Palsy. W. A. Hoyt, Ann Arbor.
82 Value of Two Stage Operation for Senile Hypertrophy of Prostate. H. H. M. Malejan, Ann Arbor.
83 Case of Multiple Sclerosis. C. W. Hitchcock, Detroit.
84 Case of Tabes Dorsalis with Unusual Therapeutic Result. T. Kiingmann, Ann Arbor.
85 Case of Syphilis in Primary Stage with Involvement of Central Nervous System. U. J. Wile, Ann Arbor.
86 Clinical and Anatomic Study of Case of Dementia Praecox. A. M. Barrett, Ann Arbor.

Military Surgeon, Chicago

January, XXXVI, No. 1, pp. 1-104

87 General Medico-Military Observations in Late Balkan Wars. C. S. Ford, U. S. Army.
88 Drill Regulations and Service Manual for Sanitary Troops U. S. Army, 1914. G. M. Blech, Ill. N. G.
89 Indian Saint John Ambulance and European War. R. J. Blackham.
90 Best Training for Hospital Corps for Fleet. F. E. McCullough, U. S. Navy.
91 Evolution of Sanitary Service in National Guard and Some Defects in Its Administration. F. O. Waage, Pa. N. G.
92 Sphere of Activities of Medical Officers Aboard Ship. C. M. Oman, U. S. Navy.
93 Ehrlich's Arsenic in Treatment of Syphilis in Military Service. J. R. Church, U. S. Army.

New York Medical Journal

January 16, CI, No. 3, pp. 97-140

94 Modernized Proctology. S. G. Gant, New York.
95 Prevention and Treatment of Suppurative Ophthalmia. C. Graef, New York.
96 Neurotic Disturbances after Accidents in Relation to Workman's Compensation. T. A. Williams, Washington, D. C.
97 Practical Prevention of Tuberculosis. M. E. Lapham, Highlands, N. C.
98 Some Considerations of Heredity. S. D. Ingham, Philadelphia.
99 For Better, For Worse. C. H. Duncan, New York.
100 An Economic View of Disease. B. F. Rea, Lafayette, Ala.
101 Practice in Mexican Mining Camp. W. Hartz, Philadelphia.
102 Case of Xanthin Calculus. J. Rosenbloom, Pittsburgh.

Oklahoma State Medical Association Journal, Muskogee

January, VII, No. 8, pp. 235-270

103 Bone Regeneration and Repair. J. F. Kuhn, Oklahoma City.
104 Acute Osteomyelitis. M. Smith, Oklahoma City.
105 Modern Treatment of Fractures. J. W. Riley, Oklahoma City.
106 Fistula in Ano. A. A. Will, Oklahoma City.
107 Pulmonary Infections. R. H. Fox, Altus.
108 Physician and Drug Habit. C. W. Fisk, Kingfisher.

Ophthalmic Record, Chicago

January, XXIV, No. 1, pp. 1-54

109 Gonorrheal Iritis as Manifestation of Old Latent Gonococcemia, Diagnosed by Complement-Fixation Test—Treatment with Bacterins. W. Reber and G. A. Lawrence, Philadelphia.
110 Spheric Aberration: Importance of Its Correction in Applied Refraction. A. B. Mason, Waycross, Ga.
111 Salvarsan in Ophthalmology. E. Stieren, Pittsburgh.
112 Case of Keratoconus Cured with High Frequency Spark. E. R. Carpenter, El Paso, Tex.
113 Melanosis of Conjunctiva. Report of Case. R. L. Randolph, Baltimore.
114 Method of Destroying Lachrymal Sac in Chronic Dacryocystitis. H. Gifford, Omaha.

Public Health Journal, Toronto

January, VI, No. 1, pp. 1-50

115 Trend of Advance in Town Planning and Child-Welfare within Empire. J. G. Adami and H. MacMurchy, Toronto.
116 Enumeration of Bacteria in Milk. J. Race, Ottawa.

Surgery, Gynecology and Obstetrics, Chicago

January, XX, No. 1, pp. 1-128

117 *Boiling Water Injections into Thyroid for Hyperthyroidism. M. F. Porter, Fort Wayne, Ind.
118 *Diagnosis and Treatment of Osteomyelitis. M. B. Clopton, St. Louis.
119 *Pylorectomy and Partial Gastrectomy in Treatment of Gastric Ulcer. W. L. Rodman, Philadelphia.
120 *Transplantation of Ovaries. T. Tuffier, Paris.
121 Goiter in Children. C. G. Buford, Chicago.
122 Three Cases of Fibrosclerosis of Penis Treated by Roentgenization without Improvement. C. A. Waters and J. A. C. Colston, Baltimore.
123 Intra-Abdominal Dynamics and Mechanical Principles Involved in Cause of Backward and Downward Displacements of Uterus. G. H. Noble, Atlanta, Ga.
124 *Experiments on Transplantation of Gastric Mucous Membrane. W. Doolin, Dublin.
125 *Dislocation of Semilunar Bone. Report of Eight Cases. R. W. Runyan, Ancon, C. Z.
126 Benign Tumors of Stomach. A. M. Campbell, Grand Rapids, Mich.
127 *Cancer of Breast. W. S. Handley, London.
128 Bilateral Congenital Caput Obstipum. A. H. Morse, San Francisco.
129 Series of Filiform Appendices. H. K. Bonn, Indianapolis.
130 *Modified Incision for Approaching Gall-Bladder. L. L. McArthur, Chicago.
131 Pituitary Extract in Marginal Placenta Praevia. Report of Case. J. Gardiner, Toledo, O.
132 Surgery of Cleft-Palate. J. Berry, London.
133 Principles which Govern Ultimate Results of Harelip and Cleft-Palate Operations. G. V. I. Brown, Milwaukee, Wis.
134 Factors of Safety in Cleft-Palate Surgery. J. R. Eastman, Indianapolis.
135 Treatment of Cleft-Palate. F. W. Goyder, Bradford, England.
136 Late Results of Cleft-Palate Operations. T. W. Brophy, Chicago.

117. **Boiling Water Injections for Hyperthyroidism.**—Further experimental and clinical observations have convinced Porter that injections of boiling water into the gland should be substituted for the so-called medical treatment in patients with small thyroids and moderate symptoms of hyperthyroidism. This method is also peculiarly well adapted to the treatment of patients with moderate or severe symptoms and relatively small glands and especially to cases wherein the hyperplasia is circumscribed. It is therefore well adapted to the treatment of patients who have had a lobectomy done and are still suffering from symptoms of hyperthyroidism with hypertrophy of the remaining lobe. Patients with large goiters and extreme symptoms of hyperthyroidism should be treated with the injections until they become safe surgical risks and then have the gland removed. Boiling water injections are not recommended in non-toxic goiter. In such cases, as in patients with large goiters and toxic symptoms, but who are good surgical risks, thyroidectomy should be the chosen method of treatment. In substernal hyperactive goiters the removal of which would be hazardous, boiling water injections under guidance of the eye should be tried.

118. **Diagnosis and Treatment of Osteomyelitis.**—Clopton emphasizes the fact that the earliest symptom of osteomyelitis is pain in the shaft of the long bone (usually near the end), accompanying septic symptoms. In a few cases of profound sepsis, pain sense is lost. Soon there is swelling of the shaft near the joint, frequently at the epiphyseal line. At this stage the joint is not involved. Septic arthritis usually is an intense infection, with less pain and several joints involved. Tuberculosis is a chronic disease that involves the epiphysis, and syphilis may give a similar picture. The Roentgen ray is of great value, except at onset of the infection. The treatment in the acute stage is to drain to the center of the medulla by removing a narrow channel of bone along one side of the shaft. Gutta-percha tissue is used to drain this channel. The medulla should never be "cleaned out," as it is needed for the endosteal regeneration.

In the subacute or chronic stage of osteomyelitis of the femur or humerus, treatment is planned to allow the shaft to heal after efficient and sufficient drainage. If sequestra have formed, these are removed, and the cavity wiped out with gauze. It is best not to curet these cavities or to attempt to sterilize with antiseptics. The iodoform beeswax of Mosetig-Moorhof is introduced into the cavity to act as a drain, which is partially absorbed and partially extruded. Gauze should never be used as a drain in either the acute or chronic stage. When one bone of the forearm or leg is involved (and at times the humerus), the shaft is removed subperiosteally about five or six weeks after draining the acute infection. The periosteum at this time should show a sufficient thickening to cast a shadow on the photographic plate. After removing the shaft the periosteum is sutured into a ribbon joining the ends of the remaining bone, and from this periosteum new bone is formed to replace the diseased shaft. In the meantime the other bone supports the limb in its proper position. In about four months the new bone can support weight. The forearm can be useful in less time. In a small proportion of badly infected cases, bone does not regenerate completely after removal of the shaft, and bone transplantation has to be resorted to after healing is obtained. Chronic localized osteomyelitis cavities in the cancellous bone may be treated by healing under blood-clot, or drainage with Mosetig-Moorhof wax, after the bone detritus has been removed with rongeur and gauze.

119. **Pylorectomy and Partial Gastrectomy in Treatment of Gastric Ulcer.**—If the ulcer, or ulcers, are situated at or near the pylorus, as they are in about 80 per cent. of all cases, and the pyloric end of the stomach and proximal portion of the duodenum can be easily mobilized, Rodman claims that pylorectomy which gets rid of the existing ulcers, and prevents future ones to a large extent, removing, as it does, four-fifths of the ulcer-bearing area, is certainly the operation of choice. The frequency with which hemorrhage, perforation and cancer, especially the latter, follow gastro-enterostomy, show it to be wholly inadequate. Moreover the radical operations of excision and pylorectomy are only slightly more dangerous while far more beneficent in every way than gastro-enterostomy.

If, however, the converse obtains, the stomach and duodenum being bound down by adhesions to adjacent viscera, such as the pancreas, liver, gall-bladder, transverse colon, etc., simple gastro-enterostomy, the anastomosis being made about the middle of the stomach, should be practiced. If the symptoms are not relieved within a reasonable time, then pylorectomy may be performed more safely. Before such a step is taken the operator should be assured that the gastro-enterostomy is patent and functionating. The operation can also be done in two stages in those patients not in good condition, whether it be from hemorrhage, anesthetic, or other cause. It is often best to perform pylorectomy for cancer in two stages, and practically the same is true in ulcer operations, but it will be much less frequently the case.

Gastric ulcers, duodenal as well, are more frequently multiple than is appreciated. With the number and chronicity of ulcers potential dangers are increased, and radical measures are more urgently called for. Ulcers away from the pyloric end, that is, occupying the expanded four-fifths of the stomach, should preferably be treated by partial gastrectomy or removal of the ulcerated area. Although such ulcers rarely undergo cancerization, they frequently bleed and perforate, both of which dangers are increased by the freer movements of this portion of the stomach during respiration. Moreover, on this account protective adhesions are less apt to form about them, if we except the lesser curvature, which is relatively immobile. If simple excision is practicable, it should be done, as it produces a smaller mortality (1.7 per cent.) than gastro-enterostomy. In some cases it may be wise, though it is not usually so, to supplement excision by gastrojejunostomy. It all depends on the location and size of the ulcer and whether or not the stomach can presumably carry on its functions without irritating, stretching, or otherwise interfering with the line of suture.

120. **Transplantation of Ovaries.**—During the last eight years, from Nov. 15, 1906, to July 15, 1914, Tuffier has performed 204 operations. He performed homografting twenty-four times under the most favorable circumstances, but it did not prove successful. He performed seven heterograftings immediately after the removal of an ovary or after the gland had been preserved in cold storage from one hour to forty-four days, and the operation has never given a single good functional result. He transplanted an ovary from one young woman to another who presented, after the removal of ovaries and tubes very severe symptoms simulating change of life. There was every chance of success, for the patients were of the same age, of the same complexion, and had the same color hair. The disturbances were the same after as before the transplantation, the patients had all the symptoms of menopause, and after some months the ovary gradually decreased in size.

Tuffier performed 145 autografting operations. Two circumstances under which the operations were performed are cited: First, total hysterectomy and transplantation of one or both ovaries, in whole or in part. Eighty-four operations were performed in this. Second, in salpingitis, Tuffier leaves the uterus in place, removes the two adnexa, and then grafts either one or both ovaries. Sixty-five operations have been performed following this technic. After the transplantation, in which the uterus is left in place, the ovary remains unaltered for three or four months and seems to lie dormant. Sometimes it is a little tender, and the patient has all the symptoms of change of life. But after a while the ovary becomes active, enlarges, and is sometimes painful for five or six days, whereon all symptoms subside and menstruation reappears. Generally the congestion of the ovary precedes menstruation by five or ten days. On the same day when menstruation has commenced all the symptoms of menopause disappear entirely. After a month or so ovulation again takes place.

Of the sixty-five patients on whom Tuffier performed autografting operations without hysterectomy he has interviewed thirty-seven from one to six years after operation and thirty-two had their periods regularly. In the five cases which did not have regular periods, two important points were noticed; first, the patients were either more than 40 years old, or second, they were septic cases in which it was necessary to dip the graft into tincture of iodin. Certain patients have the change of life sometimes from one to three years after the operation. Sometimes the monthly flow is irregular. The results are the same whether one or two ovaries are grafted. Tuffier did twenty-eight autografts of both ovaries and has interviewed later twenty of these patients, nineteen of whom had regular menstruation. He has done thirty-seven autografts of one ovary and from this series seventeen patients were seen later and thirteen had regular periods. Of those having amenorrhea, one was over 40 years old. Tuffier concludes that ovulation and the internal secretion are not so important as is generally believed. From all these facts he believes that every month the female creates by internal secretion, a chemical substance; when this substance exists in the blood in sufficient quantity it acts on the ovary, which modifies it, and menstruation is consequently produced by this modified internal secretion and the secretion is eliminated with the flow. He has been able to localize this chemical substance in the blood. It exists in the serum, because he can produce menstruation by injecting defibrinated blood. If menstruation does not occur, then the chemical substance is retained in the circulation and causes an auto-intoxication.

124. **Transplantation of Gastric Mucous Membrane.**—Doolin's experiments showed that the autoplastic transplantation of gastric mucosa in dogs is feasible and leads to definite cyst formation. These cysts are lined with a single layer of cubical epithelium arising from epithelial islets which have survived the general necrosis of the graft. The graft depends for its nutrition on the blood-supply conveyed to it by adhering omentum. The size of the cyst so formed varies directly with the length of time since the operation. Tubular grafts of hollow abdominal mucosal tissue depend for their success on their muscularis—the canal being later lined with epithelium growing in from the surroundings.

125. **Dislocation of Os Semilunaris.**—Runyan claims that closed reduction can be accomplished in about one-half of the recent cases of dislocation of the semilunar bone by the method of hyperextension followed by flexion while counterpressure is maintained over the dislocated semilunar. Prompt diagnosis and treatment are essential in obtaining

good results. The more speedily the dislocation is recognized and reduced, the better the result. Closed reduction should always be tried, irrespective of the length of time the dislocation has existed. Closed reduction being impossible, an anterior incision should be made and the dislocation reduced. Failing in this, it is necessary to excise the semilunar, but excision should be done only as a last resort.

127. **Cancer of Breast.**—A study of the secondary deposits which are easily accessible to observation, namely, those in the skin and bones, showed Handley that these secondary deposits, commencing near the primary growth, spread in a centrifugal manner from it. While in extreme cases this centrifugal spread may involve the greater part of the area of the body, the arms below the elbows and the legs below the knees are never the seats of such deposits. Handley began to make microscopic sections of long centrifugal strips of the skin and subcutaneous tissue, radiating from the primary growth. In them, at points near the growth, isolated nodules of secondary growth could be seen. Farther out at a varying distance up to 10 inches from the primary growth, he found a narrow and elusive zone a few millimeters wide in which the lymphatic vessels were choked by cancer-cells. Beyond it the tissues were normal. This zone was met with in each of the radiating strips, and it constitutes the true growing edge of breast cancer. It may be found at any distance up to 2 feet from the primary growth. The detection of this microscopic growing edge Handley claims is the foundation stone of the permeation theory of dissemination.

These facts he explains as follows: The immense proliferative pressure of the epithelium at the primary focus forces cancer-cells into the small lymphatics, along which they grow in continuous lines. This process which Handley has called permeation is the master-process of dissemination. Reaching the lymphatic plexus into which the breast in the first instance drains, permeation involves a larger and larger circular area of this plexus, filling up its channels with lines of cancer-cells and sending offshoots into the adjoining muscular and cutaneous layers. Sooner or later cancer-cells are thus brought into the serous cavities and rapid visceral dissemination occurs.

The main operative principles deduced from the permeation theory by Handley are: First, the area which demands widest removal is that in which the growing edge is situated, namely, the deep fascia, in which is found the lymphatic plexus which forms the highway for the spread of the disease. Second, the area of deep fascia removed must be roughly circular in outline, since permeation spreads with approximate equality in all directions from the primary growth. Third, the primary growth must always be the center of the area of fascia removed. Failure to observe this rule accounts for many recurrences. Fourth, the skin and muscles being secondarily involved over a smaller area, and less widely than the fascia, the removal of a smaller area of these tissues will suffice. The removal of the embolically invaded regional lymphatic glands is, of course, essential.

130. **Modified Incision for Approaching Gall-Bladder.**—In those cases, then, in which a perfectly obvious gall-bladder drainage, stone removal, or ectomy is indicated, McArthur urges to incise the posterior sheath parallel with the tendinous fibers of the transversalis, namely, nearly transversely. To select the level for its incision about an inch above the free end of the gall-bladder, making a small opening first for confirmation of the diagnosis, by digital exploration. The incision can then be enlarged to the middle line and as far laterally as seems essential. The transversalis (posterior sheath) can, with the gloved fingers, be separated from the internal oblique with ease. When the necessary interference with the gall-bladder has been made and the latter dropped back, the cut margins of the transversalis are seen to lie in contact and its respiratory action noted as continuing normally. Then the cut edges can be whipped together with catgut sutures under absolutely no tension. The support thus given by the uncut transversalis renders tension stitches wholly unnecessary and makes easy the closure of the anterior sheath and skin.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

January 2, I, No. 2818, pp. 1-56

1 Principles and Practice of Localization of Foreign Bodies by Roentgen Rays. J. M. Davidson.
2 Localization of Bullets and Shell Fragments. F. Hernaman-Johnson.
3 Rapid Method of Localization by Roentgen Rays. K. W. MacKenzie.
4 *Acute Hemorrhagic Pancreatitis. F. Eve.
5 Grey Hair and Disease Limited to Nasolabial Area. G. L. Creatle.

Lancet, London

January, I, No. 4766, pp. 1-58

6 *Acute Hemorrhagic Pancreatitis. F. Eve.
7 Experiences of Shell Wounds in Present War. A. W. Sheen.
8 Roentgen Rays in War Time. E. W. H. Shenton.
9 Case of Spontaneous Recovery from Detachment of Retina. H. L. Eason.
10 *Amputations in War Surgery. M. Fitzmaurice-Kelly.
11 Two Cases of Cicatricial Stenosis of Larynx. H. Barwell.
12 Leper Houses and Medieval Hospitals. C. A. Mercier.

4 and 6. **Acute Hemorrhagic Pancreatitis.**—An excellent review of this subject is given by Eve. He states that clinical experience bears out the conclusions that stasis and infection are the main elements in the causation of acute pancreatitis, and these are most commonly brought about by cholelithiasis. Egdahl, in an analysis of 105 cases, found that in 44 (42 per cent.) the disease followed gall-stones or suspected gall-stones. But in only three of these cases was the stone in or near the ampulla. In 44 cases of Körte cholelithiasis existed in 21 (47 per cent.) and in 16 consecutive cases analyzed by Dietrich cholelithiasis was found at the operation or necropsy in 8. Calculi occupied the common bile duct only twice, and in both of these they were small and not impacted. Dietrich states that in his cases gall-stones were certainly excluded only three times (18.75 per cent.).

At the London hospital during the five years 1907 to 1912 there were eleven necropsies on cases of acute hemorrhagic pancreatitis. Gall-stones were present seven times (63.6 per cent.), and a round worm occluded both pancreatic ducts in an eighth. In only one of these cases did the stone occupy the ampulla. In the remaining six cases the calculi were in the gall-bladder and were invariably multiple and small. In two cases there was a duodenal ulcer, and in one of these a constriction of the common bile duct with dilatation of the pancreatic duct was noticed; therefore gall-stones or obstruction at the papilla existed in nearly 82 per cent. of the cases. The duct of Wirsung showed evidence of stasis of secretion, or of infection in seven cases out of the eleven. It may be observed that a true estimate of the causes at work is more likely to be obtained from necropsies than from operations performed under conditions of grave illness, when the condition of the patient may preclude a careful examination of the bile passages. The exact mechanism by which the pancreas is infected evidently varies. The figures quoted indicate that the direct regurgitation of infected bile into the duct of Wirsung, owing to the impaction of a small calculus in the ampulla, occurs only in a small proportion of cases—about 20 per cent.

Eve analyzed forty cases of acute pancreatitis with reference to the symptomatology. Over one-half had premonitory symptoms of varying intensity. These consisted of attacks of pain in the upper abdomen, or occasionally over the abdomen generally (16 per cent.). The premonitory attacks of pain were in a like proportion of cases (16 per cent.) referred to the right side of the upper abdomen. In many instances the pain resembled and might be referred to cholelithiasis, and in a few to duodenal ulcer. But a fair proportion of patients shown subsequently to have gall-stone disease complained of no previous symptoms. A few cases gave a history of indigestion and flatulence. The symptoms accord with the symptoms of the group of acute abdominal crises, and closely resemble those of perforation of gastric and duodenal ulcer, of the gall-bladder, or the appendix. Many cases have been mistaken for acute intestinal obstruction. The onset is sudden, with very severe pain in the epigastrium, persistent vomiting, usually constipation, tenderness, fullness and resistance in the upper abdomen, and gradually increasing distention; the pulse is rapid and weak, the temperature lower than the pulse-rate, and not infrequently subnormal with collapse. The one symptom which gives the most probable insight into the condition is tenderness across the epigastrium and resistance over the pancreas. The most distinctive sign is epigastric peritonitis, with subsequent swelling in the left lumbar region. There being no pathognomonic sign the diagnosis is admittedly difficult and uncertain.

In the forty cases analyzed, vomiting was present in 80 per cent.; was often severe and incessant; constipation existed in 25 per cent., and was only marked in five cases. Diarrhea was present in three cases, but in one of these symptoms had existed fourteen days. Pain was almost constant, and in 50 per cent. was situated in the epigastrium or upper abdomen. In the other cases it was localized in the right hypochondrium, the right side of abdomen, or right iliac fossa; in others on the left side or left iliac fossa. Tenderness had much the same distribution as the pain. Distention existed in half of the cases. A swelling was observed in only seven (17.5 per cent.), twice in the right hypochondrium (in one of these being a distended gall-bladder), thrice on the right side of the abdomen or to the right of the umbilicus, once on the left side of the abdomen and once below the umbilicus. Cyanosis, sometimes spoken of as a characteristic sign, was only present twice; one was an acute case of twenty-four hours' duration, while in the other the symptoms had lasted fourteen days. Glycosuria was once noted, a trace of sugar being found in one of Dietrich's sixteen cases. It existed in eight of Körte's forty-four cases. One patient of Körte developed diabetes one and a half years after extensive necrosis of the pancreas, and died eight years subsequent to the operations. The general condition of patients with acute pancreatitis is indicative of an acute toxemia. Cammidge's reaction is of no definite value in the diagnosis of acute pancreatitis.

10. **Amputations in War Surgery.**—The method Fitzmaurice-Kelly advocates consists in a simple circular division of all the tissues, including the bones, at the same level, and that level the lowest possible. The skin is divided by a circular sweep, the muscles are divided at the level to which the skin retracts, and the bone is then sawn at the same level. The bleeding points are secured and tied, the nerves pulled down and cut short, and a dressing is then applied to the raw surface of the stump. The advantages claimed for the method are: 1. Economy of tissue. The amputation is performed at the lowest level at which a flap could be cut, or even lower, and all recoverable tissue is thus preserved. 2. It is applicable to otherwise hopeless cases, such as wounds, or gangrene at the root of the limbs, and in these cases carries a much better prognosis than disarticulation at the hip- or shoulder-joint. 3. It is very rapidly done, and there is very little shock. 4. The surface from which septic absorption can occur is the least possible, and the drainage is free. 5. The nutrition of the stump is unimpaired; in this respect its advantage over a flap amputation is obvious. 6. It is so simple that it is within the range of everyone, and does not need an experienced surgeon for its performance.

Beiträge zur Klinik der Tuberkulose, Würzburg

November, XXXIII, No. 1, pp. 1-110. Last indexed January 9, p. 184.

13 Theory, History and Present Status of Artificial Pneumothorax. K. Dluski.
14 *Tuberculosis of Male Genital System. M. Simmonds.
15 Early Diagnosis of Pulmonary Tuberculosis. (Inspektion, Palpation, Perkussion und Auskultation bei der Frühdiagnose der Lungentuberkulose.) F. M. Pottenger (Los Angeles).
16 *Fatal Air Embolism in Deformed Lung in Replenishing Artificial Pneumothorax. A. Mayer.
17 *Exophthalmic Goiter Symptoms with Tuberculosis. (Basedow und Tuberkulose.) Schinzinger.

14. **Tuberculosis of Male Genital Organs.**—Simmonds published an article on this subject thirty years ago, and experience since has confirmed what was scarcely believed then, that the primary infection might be in the kidney and the genital organs be only secondarily affected. In 105 cadavers he found the genital system alone involved, but in 95 there were also tuberculous processes in the kidney or bladder. The prostate seemed to have been first attacked in 50 per cent.; the seminal vesicles or epididymis in about 25 per cent. each. The usual age is from 30 to 60; tuberculosis of the female genital organs develops generally in the first to the fourth decades. Evidences of healed tuberculous processes in the prostate and seminal vesicles are extremely rare while traces of healed tubercles are found comparatively frequently in the testicles. The prognosis of genital tuberculosis in men is grave, especially when the seminal vesicles are involved. The greatest danger is from secondary tuberculous meningitis and miliary tuberculosis; a third of the men with genital tuberculosis succumbed to this complication. He found evidences of progressive tuberculous processes in the intra-abdominal parts of the genital system in 20 men who had been previously castrated for tuberculous epididymitis. Mere castration alone therefore cannot be regarded as adequate treatment for tuberculosis of the male genital system.

16. **Fatal Air Embolism in Inducing Artificial Pneumothorax.**—The trouble in the case described by Mayer, with illustrations, was due to a deformity of the lung, an abnormal peak projecting at one point and adherent to the pleura. By an unfortunate chance the needle perforated this protruding process and thus permitted air to get into a vein. The patient was a robust man and this was the fourth time the gas had been replenished. There had been no by-effects before. The injection of gas was proceeding regularly the last time and about 250 c.c. of nitrogen had been injected, when the patient drew an unusually deep breath. This pulled the needle a little to one side and the man collapsed as if struck by lightning. Under artificial respiration, oxygen and tracheotomy the cyanosis subsided but consciousness did not return and the heart beat gradually died out by the end of the third hour. Necropsy revealed the surprising fact that the greater part of the supposed tuberculous changes in the lung were of syphilitic origin. The tuberculous process was of comparatively minor importance although the sputum had contained tubercle bacilli and the Wassermann test had elicited a negative response.

17. **Exophthalmic Goiter and Tuberculosis.**—Schinzinger found a tendency to goiter in 355 of 521 tuberculous inmates of the Luisenheim sanatorium in his charge. Only 191 o the 355 in this group showed any symptoms suggesting exophthalmic goiter, while symptoms of this kind were evident in 89 of the 166 cases with an apparently normal thyroid. There were only 5 in the 521 with pronounced exophthalmic goiter but among the patients with tuberculosis in its first stage some of the symptoms characteristic of Basedow's disease were comparatively common, especially the unstable pulse and slight or moderate protrusion of the eyeballs, tremor and angioneuroses. His conclusion is, however, that these symptoms must be credited to the tuberculosis.

Berliner klinische Wochenschrift

December 14, LI, No. 50, pp. 1905-1928

18 Opium and Its Alkaloids. (Neues über alte Opiumalkaloide.) J Pohl.
19 *Suture of Blood-Vessels Injured in War. (Kriegschirurgisch Erfahrungen über Blutgefässnaht.) E. Jeger.
20 *A Cholera Camp. (Seuchenerfahrungen und Seuchentherapie in Feldzuge 1914.) R. Rauch.
21 Resemblance between Typhoid, Typhus, Relapsing Fever an Malaria, Alone or Superposed. (Ueber die Aehnlichkeit de klinischen Krankheitsbilder von Infektionskrankheiten.) L Riess.
22 *Tardy Suppuration in the Thyroid after Typhoid. (Zur Kenntni der posttyphösen Strumitis.) E. Melchior.

19. **Suture of Vessels in War Wounds.**—This article describes experiences in the fortress of Przemysl at the time besieged by the Russians. The article was sent out from the beleaguered fortress by aeroplane, *Fliegerpost*, and was duly

received by the publishers. Jeger reports the details of his eight cases: in six any attempt to ligate the injured vessel would unquestionably have been followed by gangrene. The suture saved the limb in four in this group. The operation came too late in three of the other cases, and in another the vein had to be stretched so much to suture it that it gave way later. In this case the vein should have been patched out with a segment cut from another vein.

He gives an illustration of one case in which the arm had been shot at the junction of the upper and middle thirds, fracturing the bone and severing the soft parts until the arm hung only by a narrow bridge of the skin and muscle on the outer side. This arm was cold, anemic, no pulsation, when the patient was first seen two hours after the injury. During the interval a tourniquet had been applied above. The brachial arteries and veins and the median and ulnar nerves had been severed and each vessel was united by an end-to-end suture, as also the vena basilica. Stimulants were required as the pulse was imperceptible on both sides after the operation and the general condition was discouraging. By the second day the young man began to improve, but there was slight fever every night for two weeks and the pulse on the operated side was still weak and intermittent. By the end of the month sensation in the arm returned and under electricity and exercise he regained the functional use of his arm to such an extent that clinically normal conditions may be anticipated before long. Jeger knows of only one similar case on record, Jianu of Bucharest having reported saving an almost entirely severed arm in this way. In Jeger's case the injury was from a gun discharged accidentally close to the arm.

20. **Experiences with Cholera at the Front.**—Rauch relates how he was sent to a village of seventeen houses in which 480 men with cholera had been collected for five days. He found them lying on wet straw in rain-soaked tents, with from ten to twelve deaths a day. He at once took possession of the five largest houses, sending the inmates to their neighbors, and had the villagers bring dry straw and hay, and the cholera patients were brought into these houses. They lay with heads to the wall and the rooms were kept hot day and night. There was very little bolus alba and prepared serum on hand, so the main reliance had to be on keeping the men warm, applying moist heat systematically to the abdomen, giving the drugs at hand in turn, first tannin, then opium, and the third day a little bolus alba. Tea and a little brandy were all that was allowed the first day, then gruels of various kinds were given, especially oatmeal gruel with a little brandy. Later a little white bread was added. There were sometimes as many as 1,000 a day of cholera sick or suspects, but the mortality averaged only two a day. When the place was abandoned all the vessels were boiled, all the firearms, cartridge belts, etc., soaked in a solution of phenol, the rooms sterilized with formaldehyd and whitewashed before they left, the villagers gladly aiding to expedite their departure.

22. **Tardy Post-Typhoid Suppuration in the Thyroid.**—Melchior reports the case of a man of 52 whose mother and grandmother had goiter and the man himself had always had a very large neck. At 43 he had typhoid and during the nine years since actual goiter had developed, but without tenderness or pain. During the last six months the neck measured 47 cm., about 18½ inches, and the breathing was interfered with, so the thyroid was resected. It was found calcified in part and in the center an old abscess containing typhoid bacilli in pure culture. Gali has recently reported a somewhat similar post-typhoid case in which the interval was twenty-one years. It is characteristic of these torpid abscesses following typhoid that they do not develop until the febrile stage is past, as he shows by various examples. The organism by that time has been relatively immunized which explains the benign character of this type of abscess and also the lack of operative infection although the abscess in the thyroid, spleen or elsewhere was accidentally opened in the course of the operation in several instances. Neither the pleura nor the peritoneum displayed any irritation afterward.

Jahrbuch für Kinderheilkunde, Berlin

December, LXXX, No. 6, pp. 561-650

23 A Form of Congenital General Dropsy. (Zur Kenntnis der sogen. foetalen Erythroblastose.) H. Chiari.
24 *Filling Cavities after Bone Operations. (Zur Abkürzung der Heilungsdauer nach ausgedehnten Nekrotomien.) C. Bayer.
25* Bronchopneumonia Simulating Croup. E. Suñer.
26 Disturbances of Circulation in Acute Alimentary Disturbance in Infants. (Zirkulationsstörungen bei akuten Ernährungsstörungen der Säuglinge.) A. Czerny.
27 Symmetrical Gangrene in Children. (Beitrag zur Raynaudschen Krankheit im Kindesalter.) V. Lederer.
28 Pathology and Treatment of Transitory Fever in the New-Born. I. Peteri.

24. **Filling Cavities after Bone Operations.**—Bayer discusses the various methods that have been adopted for filling bone cavities after operation, and concludes that the simplest and best one is to trim the sides and edges of the bone forming the cavity, so that a smooth and uniform trough will result, and then fold in the skin and periosteum to line it throughout except where the turned-in flaps of soft parts do not quite meet in the center. A roll of iodoform gauze is sutured to fit into the long groove over the turned-in soft parts. This exerts pressure on the skin and periosteum flaps and forces them down to fit closer against the bone beneath and thus adapt themselves more accurately to the cavity. It also aids in hemostasis. A compression bandage is placed over this and left in place for two weeks. The periosteum rapidly forms new bone to fill in the cavity. How completely this is done is shown by five Roentgen pictures from typical cases. The time required for healing is reduced to about half of what it is with ordinary tamponing or other modes of treatment.

25. **Bronchopneumonia Simulating Croup.**—Suñer describes six cases with pronounced symptoms of diphtheric laryngeal stenosis but which proved by the later course or at necropsy to be merely bronchopneumonia. He finds that symptoms of laryngeal stenosis, very similar to those caused by diphtheria, may be induced by inflammation of the bronchi alone. Such inflammations may be caused by various bacteria, the diphtheria bacillus and staphylococci, such cases also may follow measles. The larynx is involved mainly in a mechanical way. In the cases that came to necropsy there was extensive bronchopneumonia of both lungs, with atelectasis and emphysematous areas between. In one case there was hemorrhagic nephritis from the general infection. The differential diagnosis from true croup may be made from the initial catarrh, which seldom occurs in true croup, from the absence of a pseudomembrane in the mouth and pharynx, and from the early appearance of symptoms of bronchopneumonia; but these are sometimes lacking. Moreover, we may have a true diphtheric membranous croup complicated by bronchopneumonia. The prognosis is serious. The treatment is that of bronchopneumonia. Diphtheria antitoxin may be given if there is any doubt about the diagnosis. The author has found intubation of great value.

In his first case the pronounced croup and râles heard over both lungs had all developed within a few hours, and the croupy stridor kept up unmodified till the child died the next day. Antitoxin had been given but without intubation or bacteriologic examination. Suñer was confident that the trouble was not primary laryngeal diphtheria, as the consultants assumed, but rather an extremely acute capillary bronchiolitis, and his further experience with other cases confirmed the fact that bronchopneumonia can develop occasionally like membranous croup. Inflammatory processes in the lower air passages are thus able to induce the signs of laryngeal diphtheria. Such cases run an unusually protracted course and are not modified by antitoxin, as in laryngeal diphtheria. In one case the croup developed after measles but subsided after two days under local moist heat to the larynx. One child of 2 had total obstruction of the larynx following a week of catarrhal trouble of the air passages. Antitoxin and intubation failed to relieve and no false membranes were discovered even at necropsy. In one of his cases necropsy showed diphtheria bacilli in a small clot in one bronchus, but no membranes, and the benefit from intubation testified to the involvement of the larynx in the inflammation. The child of 3 was convalescing from measles when attacked by the bronchopneumonia. The bronchopneumonic false croup occurs exclusively in children, and without any morbid manifestations in the larynx. There is always a preliminary catarrhal affection of the upper or lower air passages or both, then a period of gradually increasing laryngeal stenosis, and then the period of suffocation unless relieved by intubation. There is generally fever through all the stages and signs of bronchopneumonia. The disease runs its course in from two to twenty days, averaging from ten to fourteen. Only two recovered in the six cases reported.

Medizinische Klinik, Berlin

December 13, X, No. 50, pp. 1781-1810

29 *War Wounds of the Lower Jaw. (Schussfrakturen des Unterkiefers und ihre Behandlung.) H. Schröder.
30 *Some Important Principles in Dietetics. (Die Ernährung des Soldaten im Felde.) O. Cohnheim.
31 War Wounds of the Eyes. (Augenverletzungen im Kriege und ihre Behandlung.) C. Adam.
32 Compound Fractures in War; Twelve Typical Cases. (Zur Kasuistik offener Knochenbrüche.) G. Nespor.
33 Early Operative Treatment of War Wounds of Peripheral Nerves. C. Becker.
34 *Dry Benzidin Test for Invisible Blood. (Die Blutprobe nach Artur Wagner.) M. A. Zengerle.

29. **Fracture of Lower Jaw.**—Schröder gives illustrations of the aluminum splints for the lower jaw of which he keeps a supply on hand at the front; also stout wire splints held in place by being tied to the teeth, but the greatest reliance is placed on hard rubber shells corresponding to the soft parts over the entire jaw. The fractured jaw is exposed and all devitalized tissue cut away. Then a corresponding piece of one of the rubber shells is cut out to fit the gap in the jaw and wired to the bone on the inside. He has frequently had the wounds heal by primary intention after treatment of this kind, even when half the jaw had been shot away. The patients can open and shut the mouth almost at once. A permanent prothesis can be substituted for the temporary device as soon as healing is complete, namely, in four or six weeks.

30. **Importance of Salt and Water for Normal Digestion.**—Cohnheim comments on the fact that the customs of eating in all lands, however diversified they may appear, yet have the one trait in common that the stomach is not left empty long. Another meal follows when the last has been finally all expelled from the stomach. This takes longer with certain articles of food than with others, but it depends mainly on the proportional amount of gastric juice secreted. The secretion of gastric juice also draws on the reserves of acid in the blood, he continues, and by this means the lactic acid accumulating in the blood, as it is generated in fatigued muscles, is drawn out of the blood to serve as a component of the gastric juice. This explains the promptly refreshing action of food taken when one is much fatigued. For this purpose it makes little difference what the food is; anything that "relishes" starts the secretion of gastric juice, and thus serves to relieve fatigue in this way. When fluid and salt are lost in profuse sweating, the gastric juice cannot be produced in normal amounts unless provision is made for ample intake of both fluid and salt. When the secretion of gastric juice is deficient, the stomach empties itself before digestion is complete, and the chyme is hurried along through the upper bowel, with diarrhea as the result. He emphasizes the above points with special reference to the troops in the field, reiterating the necessity for food that will stay long in the stomach, the necessity for ample intake of salt and water, and the danger of mistaking for dysentery a diarrhea which is merely the result of a deficit in gastric-juice production from lack of ingredients from which to make it.

34. **Dry Test for Occult Blood.**—Zengerle confirms the convenience and reliability of Wagner's modified benzidin test for invisible blood in the stools. (Wagner's description was summarized in The Journal, 1914, lxiii, pp. 519 and 1987.) A knife-tip of benzidin is mixed with 2 c.c. of glacial acetic acid and 20 drops of a 3 per cent. solution of hydrogen dioxid. A scrap of the stool is smeared on a dry slide lying on white paper. A drop of the above reagent is then poured on it, and if there is admixture of blood the tint changes at once to a pronounced blue.

Zengerle's experience confirms the reliability of the test not only for invisible blood in stools but in medicolegal investigation of traces of blood anywhere. His attention was attracted to the possibilities of the test in this line by finding two small blue spots on one of his fingers as he was compounding the above reagent. As if by magic he thus learned of the existence of two minute holes in the rubber gloves he had been wearing. Gauze and wool dipped in blood and then thoroughly washed with soap and hot water yet showed the characteristic blue reaction when a drop of the reagent fell on them. After a match dipped in blood had been charred to a coal, a scrap of the charcoal treated with the reagent changed its tint to bright blue, as also ash from another blood-stained match. Milk and rust do not change the tint; ferric chlorid causes a black discoloration. Pus yielded the blue tint in his tests, but there may have been traces of blood in the pus.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

December, XL, No. 6, pp. 633-708

35 Rupture of the Intestine from Contusion during Pregnancy. (Darmruptur durch stumpfe Gewalt bei Gravidität.) J. A. Amann.
36* Diagnosis and Prognosis of Kidney Changes in Pregnancy. (Nierenveränderungen in der Schwangerschaft.) P. Wolff and M. Zade.
37 *The Stem-Pessary. (Der intrauterine Stift.) A. Martin.
38 Importance of Colostrum in the Nutrition of the New-Born. (Ernährungsverhältnisse Neugeborener.) G. Benestad.

36. **Kidney Changes in Pregnancy.**—Wolff and Zade say that among their 3,477 deliveries, 1909 to 1913, there were 106 cases of severe disturbance of kidney function, that is, in about 3 per cent. In 52 of the cases there was eclampsia; in 21 kidney disease arising during the pregnancy and caused by it; in 31 chronic nephritis, and there were 2 cases that could not be definitely classified. Most of the cases of eclampsia were in primiparae, as also a slight majority of the cases of *nephropathia e graviditate,* but the majority of the cases of chronic nephritis were in multiparae. Wolff and Zade conclude that with our present methods of examination the different forms of kidney disease during pregnancy cannot always be distinguished with certainty. During the puerperium, and later, chronic nephritis may develop from the kidney trouble started by the pregnancy or left by eclampsia. There is a predisposition to recurrence of *nephropathia e graviditate* in later pregnancies. Albuminuric retinitis may be observed in pure kidney affections and in eclampsia. In chronic nephritis during pregnancy, albuminuric retinitis has not the bad prognosis that it has if occurring outside of pregnancy. The retinitis may be caused by a kidney disturbance superposed on the chronic nephritis, and may disappear with the former at the end of the pregnancy.

37. **The Stem-Pessary.**—The stem-pessary has fallen into disrepute but Martin believes that it has a legitimate use in certain cases of amenorrhea and oligomenorrhea, especially those caused by infantile development of the uterus. He has had excellent results in such cases and has never seen any harm from its use if strict asepsis was observed.

Münchener medizinische Wochenschrift, Munich

December 8, LXI, No. 49, pp. 2333-2364

39 Operative and Radiotherapy of Benign and Malignant Tumors of the Uterus. (Geschwülste der Gebärmutter.) H. Fehling.
40 Distribution in the Body of Injected Cholin. P. Ellinger.
41 Influence of Oxidation and Reduction on Salvarsanized Serum. (Einfluss von Oxydation und Reduktion auf die Wirkungsstärke des Salvarsanserums.) A. Stühmer.
42 Sterilization of Solutions of Morphin. E. Deussen.
43 *Social-Economic Importance of the After-Care of the Wounded. (Die volkswirtschaftliche Bedeutung der Nachbehandlung Kriegsverletzter.) K. Grassmann.
44 Inhibiting Influence of Copper Salts on Growth of Tubercle Bacillus. (Die entwicklungshemmende Wirkung der Kupfersalze auf das Wachstum des Tuberkelbazillus.) Gräfin v. Linden.
45 Abdominal Wounds in War. (Zur Prognose und Therapie der Bauchschüsse.) J. Rotter.
46 Asepsis in the Field Hospital. W. Hannes.
47 Wounds of the Nerves. G. Hohmann.
48 Wounds of the Jaws. (Schussverletzungen der Kiefer und ihre Behandlung.) J. Steinkamm.

49 *Urochromogen Differential Test for Typhoid. (Zur Typhusdiagnose im Felde.) M. Rhein.
50 Dry Culture Media for Differential Diagnosis of Typhoid and Dysentery. J. Morgenroth.
51 Advantages of Bolus Alba in Treatment of Paratyphoid. v. Wilucki.
52 *Advantages of Aluminum Acetate for Local Treatment of Pyocyaneus *Processes. K. Bollag.*
53 Technic for Plaster Casts and Dressings. Trumpff, F. Noll and A. Most.
54 The Food Supply and Expense during the War. II. (Die Ernährung der deutschen Zivilbevölkerung im Krieg.) v. Müller, Hecht and Others.

43. **Crippled Veterans After the War.**—Grassmann comments on the fact that the wounded either die at once or recover, as a .rule, so that there will be an exceptionally large proportion of cripples left after this war in comparison with others in which infection decimated the wounded. He urges physicians everywhere to bear in mind the ultimate restoration of the earning capacity, and to bring everything to bear that will ward off crippling deformity. A few thousand dollars spent now to equip institutions in which passive and active exercise can be taken under medical supervision may save thousands from becoming dependent cripples, restoring them to active life.

49. **Simple Differential Diagnosis of Typhoid.**—Rhein regards the diazo reaction as an important aid in differentiating typhoid. The ordinary diazo test is rather complicated, but the urochromogen reaction is practically as instructive, while this requires only from three to ten drops of a 1 per thousand potassium permanganate solution added to urine diluted one-half. (It was described in The Journal, 1914, lxii, 886.) Rhein has found that the outcome is equally reliable if merely one crystal of the permanganate is dissolved in the diluted urine in a test-tube. The yellow tint appears at once as the crystal dissolves in the test-tube as it is shaken.

52. **Treatment of Pyocyaneus Infection.**—Bollag has found nothing better than a 2 per cent. solution of liquor of aluminum acetate, with which the dressings are impregnated, in treatment of wounds infected with the *Bacillus pyocyaneus.* This arrests its growth and clears the wound, and gives it a chance for healthy granulations.

Wiener klinische Wochenschrift, Vienna

December 10, XXVII, No. 50, pp. 1583-1608

55 *Cholera. O. Buiwid, L. Arzt and E. Wiener.
56 Staining Technic for Blood and Lymph Vessel Tissues. (Zur Untersuchung der hämolymphatischen Gewebe mittels der spezifischen Blutfärbungen.) C. Gamna.
57 Wounds of the Skull in War. (Beitrag zu den Schadelverletzungen im Kriege.) H. v. Haberer. Commenced in No. 49.

55. **Cholera in Cracow District.**—Buiwid and Arzt maintain that cholera is easier to keep under control than any other epidemic disease. The first case was found in the Cracow district October 27, but soon twenty trains arrived bringing not only many more cases of cholera but thousands of persons who had been exposed to it. The exposed, to the number of 14,000, were quartered in a separate village and the disease did not spread. Only twenty new cases developed in the entire district and the nine survivors were not left carriers. The mortality among the 176 cholera patients in the isolation hospital was between 24 and 30 per cent. Anticholera vaccination was applied on a large scale and no untoward by-effects were observed and only three among the thousands vaccinated developed cramps in the legs during the first few days afterward and two others had fleeting urticaria.

Wiener has had extensive experience with cholera in Africa and Asia and calls attention to certain symptoms on the part of the nervous and vascular systems and the skin which are seldom mentioned in the text-books, such as the cramps in the upper arm, keeping the elbow at an acute angle, and the predilection for the knee-elbow position. He never knew a patient to recover who had these symptoms. Symmetrical pains in the toes or limbs, congestion of the conjunctiva, and trophic disturbances in the legs were also common. He reports that not another case of cholera developed by the sixth day after anticholera vaccination of 28,000 persons at Keryermezo, in which there was a camp of prisoners and an isolation hospital in his charge. His experience confirms the value of Rogers' method of infusion of hypertonic salt solution, but he prefers for a drink a 1 or 3 per thousand solution of hydrogen dioxid, rather than of potassium permanganate as Rogers recommends.

Zentralblatt für Chirurgie, Leipzig

December 12, XLI, No. 50, pp. 1745-1760

58 Hematomas Simulating Aneurysm. (Zur Operation der sogen. falschen Aneurysmen.) F. Oehlecker.

Zentralblatt für Gynäkologie, Leipzig

December 12, XXXVIII, No. 50, pp. 1481-1496

59 Safe Method of Access to Bladder with Hysterectomy for Prolapse of the Uterus. L. A. Oliva.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 17, XXXV, No. 135, pp. 2085-3000

60 Inhalation of Carbon Dioxid Increases Uric Acid Content of Blood of Dogs. (Inalazione d'anitride carbonica e acido urico nel sangue.) L. Preti.
61 *Epidemic of Three-day Fever and Gnat Extermination in Prophylaxis. W. Zannini.

December 20, No. 136, pp. 3001-3016

62 Importance of Calcium in Treatment of Bone and Joint Tuberculosis. (Ipercalcificazione e tubercolosi chirurgiche.) T. Silvestri.
63 *Emetin in Treatment of Hemoptysis. (Valore del chloridrato d'emetina nel trattamento dell'emottisi tubercolari.) B. Nicola.

61. **Three-Day Fever.**—Zannini states that in his province in northern Italy there has been a recent epidemic of this disease, nearly all in men, no children. The symptoms are a suddenly developing fever, from 39 to 41 C. (102 to 105.8 F.) intense headache, with localized and general pains, insomnia, congestion in the conjunctiva and pharynx, and in about a third of the cases bradycardia and leukopeny. The fever subsides after three days but great weakness is left and in a few instances there was some mental confusion for a time. This infection has been proved to be transmitted by the bite of a nocturnal gnat, *Phlebotomus pappatasii.* Quinin and tonics are the reliance in treatment. The same principles should be applied in prophylaxis as for malaria.

63. **Emetin in Treatment of Tuberculous Hemoptysis.**—Nicola reports twenty-one cases of hemoptysis in tuberculous patients all treated by subcutaneous injection of about 0.04 gm. of emetin, repeated after an interval of twelve hours; in some of the cases the first injection was 0.06 gm. and the second was 0.04, with an interval of only three hours. In one case 0.32 gm. of emetin was given fractioned in thirty-four hours without result. In another, four injections of 0.06 gm. within twenty-four hours finally conquered the tendency to hemoptysis. Analysis of the various cases teaches that a good result can be counted on only when the hemoptysis occurs in the early stages of tuberculosis, and there is not much loss of blood, or in the cases with high blood-pressure and unstable vasomotor system. In all his cases of this kind the tendency to hemorrhage was definitely arrested by the emetin in from ten to forty-eight hours. On the other hand, when the hemorrhage was the result of passive venous congestion or of an ulcerative process with abnormally low blood-pressure, emetin not only failed to arrest the hemoptysis but induced symptoms of mild toxic action when the dosage was pushed.

Policlinico, Rome

December 20, XXI, No. 51, pp. 1777-1812

64 Sterilization of Vaccine with Ether. (Sulla depurazione rapida della linfa vaccinica mediante vapori di etere solforico.) G. Roseo.
65 Phenol in Treatment of Tetanus. (Tetano guarito col metodo di cura Baccelli.) V. Cagnetta and Others.

December, Medical Section, No. 12, pp. 533-580

66 Pathogenesis of Lead Colic. E. Tedeschi.
67 *Permeability of Infant Intestine for Casein of Cow's Milk. E. Modigliani and R. Benini.
68 Reliability of Phenolsulphonephthalein Test of Renal Function. (Studio della capacita funzionale del rene.) L. Pezzana.
69 Causes of Error in Determination of Proteins in the Urine. (Di un reperto singolare, come contributo alla conoscenza della cause di errore nella ricerca della proteine nell'urina.) E. Cavazanni.
70 *Sulphur Reaction in the Urine with Cancer. (Del comportamento del solfo organico urinario nei tumori maligni. Reazione di Salomon-Saxl.) M. Capella.

67. **Permeability of Infant's Intestine for Cow's Casein.**—Modigliani and Benini tested the blood for protective ferments, using for the test the serum from rabbits treated by repeated parenteral injections of casein from cow's milk. In time their serum acquired casein-precipitating properties. Applying this biologic-test technic they obtained a positive response every time with serum from bottle-fed infants showing symptoms of gastro-intestinal disturbance on cow's milk. Positive findings were obtained also in sick new-born babies given a little cow's milk. In older, breast-fed infants with acute intestinal disturbance, the response was negative when they had been given a little cow's milk. Healthy infants at any age never gave a positive response. The experiences reported demonstrate the specific nature of the reaction and that the intestines become permeable for the casein in abnormal conditions of various kinds. They suggest further that the alien casein thus getting into the circulation may do much damage in different ways, especially on the liver.

70. **The Sulphur Reaction in the Urine with Cancer.**—Capella applied the Salomon-Saxl test in twenty-one cases of certain cancer, eleven with various other affections, and five healthy controls. (The technic was described in The Journal, 1912, lix, p. 738.) He obtained a positive response in only 48 per cent. of the cancer cases, so he thinks the test is of comparatively little differential value.

Riforma Medica, Naples

December 19, XXX, No. 51, pp. 1401-1428

71 Pain in the Peritoneum and Pain in the Intestines. (Dolore peritoneale e dolore intestinale.) G. A. Pari.
72 Tonsil Extract in Therapeutics. (L'opoterapia tonsillare nel diabete mellito.) C. B. Farmachidis and A. Vattuone.
73 *Lead Meningitis. (Meningite asettica di origine saturnina.) L. Preti.

73. **Lead Meningitis.**—Preti was treating a painter for his ninth attack of lead colic, which soon subsided under hot baths, pilocarpin, etc., but was followed by paresis of the legs, which also gradually subsided in a couple of weeks. Ten days afterward various joints and muscles became painful and in the course of a few days fever developed suddenly, with intense headache, pain in the back of the neck, the Kernig sign, Cheyne-Stokes breathing, and other signs of severe acute meningitis, the patient finally becoming unconscious. The cerebrospinal fluid was under high pressure but sterile. The patient recovered consciousness after 25 c.c. of the fluid had been withdrawn, and recovery proceeded rapidly. Nearly all the symptoms had disappeared by the end of the week. About 20 c.c. of fluid was then withdrawn by lumbar puncture. It was still under considerable pressure, but the specific gravity had dropped from 1.010 to 1.004, the albumin from 0.5 per cent. to traces, and the former traces of sugar had almost disappeared. Culture media and animals inoculated anew confirmed the aseptic character of the meningitis. Leukocytes were found in the fluid each time but they were of normal shape and aspect.

Brazil-Medico, Rio de Janeiro

November 22, XXVIII, No. 44, pp. 405-412

74 *False Tabes Dorsalis of Malarial Origin. (Casos de pseudo-tabes palustre. Notas para o seu diagnostico differencial. Pathogenia.) A. A. Da Matta. Commenced in No. 41.

74. **Tabes of Malarial Origin.**—Da Matta describes some cases of polyneuritis and tabes due exclusively to chronic malaria. Differentiation is possible by examining the blood and urine, and the clinical course. With the malarial false tabes there is none of the changes in the heart and respiration pathognomonic of beriberi. The presence of urobilin in the urine also speaks for a malarial origin. Under vigorous quinin treatment, the nerves recuperate from the action of the toxins that the malaria germs have been generating and a complete cure is possible.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 10, pp. 589-656

75 Red Blood Corpuscles in the Urine of Normal Persons. J. E. Schulte and F. J. L. Woltring.

No. 11, pp. 657-724

76 Segmental Anatomy. (Over dermatomerie.) B. Brouwer. Concluded in No. 12.
77 The Cammidge Reaction. H. J. Lameris and C. J. C. van Hoogenhuyze.

No. 12, pp. 725-804

78 Bananas in Dietetic Treatment. (Bananen in het dieet bij darmaandoeningen.) C. D. de Langen.
79 Properties of the Cancer Cell. P. G. J. Duker.

Hospitalstidende, Copenhagen

December 23, LVII, No. 51, pp. 1489-1520

80 Production of Uric Acid in Man. IV. (Urinsyrens Dannelse hos Mennesket.) I. P. Chrom.

Nordisches medizinisches Archiv, Stockholm

XLVI, Internal Medicine, No. 3. Last indexed April 25, 1914, p. 1370

81 *Formation of Uric Acid in Man. III. (Bildung der Harnsäure beim Menschen.) J. P. Chrom.

81. **Production of Uric Acid.**—To show the practical importance of the research reported, Chrom relates that ten years ago he had a patient, a married woman of 55, who for thirty-five years had suffered from depression, headache and insomnia with, latterly, hallucinations and sensations of oppression. She had tried all kinds of treatment to no avail. Her appetite and bowel functioning were good and nothing objective could be found except an unusual amount of uric-acid crystals in the urine. This started him to investigate the mechanism of the production of uric acid and the ratio between the H_2SO_4 and the æ-H_2SO_4. He found it remarkably low, not over 4-1. Under suitable dietetic measures he succeeded in raising this ratio to 7-1, and as he accomplished this all her symptoms disappeared. He never got the ratio above 9-1, but she has been in perfect health during the last few years. The ratio at the last examination was 63-1.

He has apparently established that this ratio between one-half of the amount of uric acid and the total amount of the ethereal sulphates is proportional to the ratio between their molecular values. He produces evidence to show that as the conjugated sulphates are formed, the normal transformation of uric acid is interfered with and in such a way that the uric acid becomes refractory to the oxidation processes in the body, and the organism has to cast it out unoxidized. If oxalic acid is supplied to the organism, this splits the uric acid so that it becomes oxidizable. Other substances which seem to act in the same way are volatile fatty acids, and the livelier the putrefaction processes going on in the intestines, the more fatty acids are generated. Tables are given showing under seventeen headings the metabolic findings during two months on a special ration; first rye bread and margarin and then with prunes, potato and sugar. Other tables show the findings with other rations, but all seem to confirm his conception of the mechanism of the production of uric acid, namely, that the fatty acids are instrumental in splitting the uric acid in such a way that it can be oxidized. The ratio index ran up highest when cauliflower was eaten daily for a week, reaching 16.2-1. The next highest ratio was on a diet of 2,400 gm. purées; 450 gm. white bread; 180 gm. margarin; ½ liter milk; 360 gm. tea, and 360 gm. coffee. A high ratio was also evident on a diet of 900 gm. white bread; 150 gm. margarin; ½ liter milk; 260 gm. tea, and 360 gm. coffee. The ratio averaged lowest on a diet of nothing but 1,000 gm. fine white bread and 125 gm. margarin.

Ugeskrift for Læger, Copenhagen

November 19, LXXVI, No. 47, pp. 2007-2038

82 A Case of Pemphigus Vegetans. A. Kissmeyer.

December 17, No. 51, pp. 2145-2176

83 *Ultimate Outcome of Traumatic Neuroses. (Om traumatiske Neuroser og deres senere Forløbsamt om deres Forhold til Erstatningsspørgsmaalet.) A. V. Neel. Concluded in No. 52.

83. **Traumatic Neuroses.**—Neel reviews the experiences of accident insurance societies in 189 cases of traumatic neuroses. The trauma had injured the head in sixty-eight cases but in 106 there did not seem to be any organic injury and the traumatic hysteria was due in large part to the indemnity factor. In fifteen cases there were actual neurasthenic neuroses, mostly the result of fright, and this group, he declares, is all that should strictly be called traumatic neuroses.

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THE HISTORY OF OPIUM AND SOME OF ITS PREPARATIONS AND ALKALOIDS *

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If the entire materia medica at our disposal were limited to the choice and use of only one drug, I am sure that a great many, if not the majority, of us would choose opium; and I am convinced that if we were to select, say half a dozen of the most important drugs in the Pharmacopeia, we should all place opium in the first rank. If we were to inquire, however, into how much the great majority of the medical men know about the history of this wonderful product of plant life, which, when judiciously employed, has proved such a boon to suffering humanity, if we were to ask about the origin of some of our most familiar remedies—laudanum or paregoric, for instance—I fear the information gleaned would be meager. It is doubtful whether it is even generally known that opium, so widely used in China, is not indigenous to that country, but was introduced there at a comparatively late date. This were apology enough for a brief historical sketch on the subject, but a glance at the history of opium and its derivatives from the earliest time to the present may teach us more. If the aim of the history of medicine is not altogether the recitation of interesting anecdotes, but rather to trace the progressive development of our noble art and science, then is the history of no other drug more calculated and better fitted to illustrate the gradual transition from the obscurity and mysticism of the ancient *Dreck-Apotheke* or polypharmacy and kakopharmacy to the rational therapeutics of the present day.[1]

EARLY HISTORY

The medicinal properties of poppy juice date from a remote period, and yet not so far back in antiquity as we might expect, for the earliest definite and authentic references to it are found only in the Greek and Latin literatures. Of course, recalling the mystic rites and highly developed culture of the ancient Egyptians one is inclined to imagine that the narcotic properties of opium were known to them; but the investigations of Unger (1857) have failed to trace any acquaintance with opium in Ancient Egypt, and Dr. Ember, of the Semitic Department of this university, tells me he knows of no reference to it in Egyptian literature. According to some Hebrew scholars, there is a reference to poppy juice in the Bible. In several passages in the Old Testament the word *rôsh* is mentioned in connection with the word *la'anah*, wormwood or absinthe (Jer. viii 14, ix 14, etc.). *Rôsh* in these passages is in the authorized version rendered hemlock. *Rôsh*, however, in Hebrew is the word for "head," and so it has been taken by later scholars to mean poppy-head, and *me-rôsh*, or the juice of *rôsh*, rendered by Jewish interpreters as "poison water," is taken to mean the juice of the poppy. This interpretation fits well enough in the context, and further support is given it by the fact that the Latin for poppy-heads is *caputa*. Professor Haupt is convinced that *rôsh* means the poppy, and so also is Professor Post, who is considered an authority on the flora of Palestine. In the Talmud we have one reference to opium, under the name *ophion* (Jerusalemic Talmud, Tr. Abodah Zarah, 40a), but that word was clearly borrowed from Greek.

In regard to Sanskrit, Prof. M. Bloomfield of the Sanskrit department of this university tells me that opium is not at home in India, and so in the classical Hindoo literature (Brahmanical, Buddhist, Jinist) there is found no reference to it. From the time of the Mogul Conquest on there appears a word *Khash-khash* which means poppy-seed, and *Khash-khasha-rasa*, juice of the poppy. In this it is easy to recognize our modern word *hashish;* and so it seems that at that early date the narcotics opium and cannabis indica were confused with each other.

In modern Sanskrit lexicons there are found the names *aphena* and *ahi-phena* appiled to opium; *aphena* strictly means "foam," and *ahi-phena*, "serpent's foam." As these words for opium do not occur in any literary document, Dr. Bloomfield suspects that they are the English opium "sophisticated by what is known as popular etymology."

The original home of the poppy was in Asia Minor. From there it was carried to Greece at a later period.

The name opium is derived from the Greek *ὀπός* "juice." From this word were later formed the Hebrew *ophion* already mentioned, and more particularly the Arabic *af-yun*, which has found its way into other Asiatic languages. The Chinese name for the drug *o-fu-yung* (and its modifications *ya-pien* and *opien*) are not of native origin, but are all derived from the Arabic.

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* This sketch is intended to be an introduction to a pharmacologic study of some opium alkaloids carried on by the author and endorsed by a grant from the Council on Pharmacy of the American Medical Association.

[1] In the preparation of this manuscript the following authorities have been frequently consulted:

Geissler and Möller: Real Encyclopedie der Gesammten Pharmacie, Leipzig, 1886-1891.

Fluckiger and Hanbury: Pharmacographia or History of Drugs, 1874.

Rice: New Remedies, 1876, p. 229.

Jones, John: The Mysteries of Opium Revealed, London, 1701.

Guareschi: Einführung in das Studium der Alkoloide, Berlin, 1896.

Thompson, C. J. S.: The Mystery and Romance of Alchemy and Pharmacy, 1892.

Jeffreys and Maxwell: Diseases of China, 1906.

It is not at all certain whether Hippocrates was acquainted with the juice of the poppy. According to Wootton, he refers to a substance called *mecon* to which he attributes a purgative as well as narcotic action. Some think that it was opium; others believe that he was referring to another plant. In any case, he made but very little use of the drug.

The first authentic reference to the milky juice of the poppy we find by Theophrastus at the beginning of the third century B. C., when he speaks of it as μηκώνιον (meconion).

Scribonius Largus,[2] in his "Compositiones Medicamentorum," about the year 40 of the present era, describes the method of procuring opium from the capsules of the poppy, and about the year 77 of the same century Dioscorides makes a distinction between the juice of the capsules which he called ὀπός and the extract of the whole plant or μηκώνειον, which he regarded as less active. He describes the method of incising the capsules, and refers to adulterations of the drug with the milky juices of other plants such as Lactuca, so that from his statements it is evident that the collection of opium was quite an industry in Asia Minor at that time. He also describes the preparation of a syrup of poppies or *dia-kodion,* which is the original of the syrup of poppies of the German and other Pharmacopeias to this day.

Pliny devotes some space to a description of opium and its medicinal use, and the drug is mentioned repeatedly as *lacrima papaveris* by Celsus in the first century and by numerous other Latin writers. Galen spoke enthusiastically of the virtues of opium confections, and the drug was soon so popular in Rome that it fell into the hands of shopkeepers and itinerant quacks.

The introduction of the drug to the natives of the East was through the Arabs, and in the first instance to Persia. Its introduction into India seems to have been connected with the spread of Mohammedanism and was favored by the Mohammedan prohibition of wine.

The Arabic physicians used opium very extensively, and even wrote special treatises on some of its preparations. The most celebrated of them, Abu-l-ali-ibn-Sina, more commonly known as Avicenna (980-1037), recommended it especially in diarrhea and diseases of the eye. Avicenna himself is said to have met death from an overdose of the drug. Serapio (about 1090) used it freely, and Maimonides and Averroes each wrote a treatise concerning the theriac, of which I shall have much more to say a little later.

The earliest mention of opium as a product of India is by the traveler Barbosa, in his description of the Malabar coast in 1511. A Portuguese historian, Pyres, in a letter to Manuel, King of Portugal, in 1516, speaks of the opium of Egypt and Bengal. It is from Egyptian Thebes that we have the terms "opium thebaicum" and the alkaloid thebain.

Opium is supposed to have been brought to China first by the Arabs, who are known to have traded with the southern parts of the empire as early as the ninth century. Later the Chinese began to import the drug in their junks from India. At that time it was used by them exclusively as a remedy for dysentery. It was not before the second half of the eighteenth century that the importation of opium began to increase rapidly through the hands of the Portuguese, and a little later through the famous East India Company. In 1870 the English established an opium depot in Lark's Bay, south of Macao, and the traffic rapidly increased, so that very soon the Chinese authorities began to complain, and in 1820 an edict was issued forbidding any vessel having opium on board to enter the Canton River. A system of contraband followed, then political friction between England and China, and the so-called Opium War, which culminated in the Treaty of Nanking (1842) by which five ports of China were opened to foreign trade, and in 1858 opium was admitted as a legal article of commerce. By that time the vice of opium-smoking had spread like a plague over the gigantic empire, and became so deeply rooted that, in spite of innumerable edicts and decrees, all efforts to check its growth have been powerless. A poor sort of missionary work by the enlightened West among the heathen Orientals!

I shall not spend here any more time in tracing the history of opium in China, or in dwelling on the horrors of the opium habit, with its frightful constipation and even more terrible diarrhea, and the physical and mental degeneracy to which it leads. Our object is rather to follow the use of opiates therapeutically, and in Europe.

Since the time of Galen, the use of opium was continued in a disguised form in various concoctions and confections containing so many ingredients that the distinction between the important and useless could not be discovered, and the value of the drug was overlooked, except by a few brighter minds.

The famous physician of the middle ages, Philippus Aureolus Theophrastus Bombast von Hohenheim, commonly known as Paracelsus (1490-1540), owed much of his success to the bold way in which he administered opium to his patients. He is said to have carried opium in the pommel of his saddle and called it the "stone of immortality." His followers were as enthusiastic as himself over the virtue of opium. Platerus of Basle in 1600 strongly recommended it, and Sylvius de la Boe, a famous Dutch physician, declared that without opium he could not practice. The celebrated chemist and physician Van Helmont, about 1640, used it so frequently that he was called Doctor Opiatus, and Sydenham about 1680 writes that "among the remedies which it has pleased Almighty God to give to man to relieve his sufferings, none is so universal and so efficacious as opium."

THE FOUR OFFICINAL CAPITALS

No better illustration of the widely beneficent properties of opium and at the same time of the hopeless muddle of superstition, kakopharmacy and polypharmacy pervading the older materia medica and therapeutics, can be given than by a brief description of the four remedies which are sometimes known as the four officinal capitals, of which Wootton,[3] in his "Chronicles of Pharmacy," says, "There were writers who ventured to criticize some of the details of composition, or some of the uses made of these compounds, but the possibility of medicine existing without them was hardly contemplated previous to the eighteenth century." These four standbys or panaceas were the *mithridatium, theriaca, philonium,* and *diascordium.*

Mithridatium was a confection which derived its name from Mithridates VI or the Great, king of

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[2] Largus, Scribonius: De Compositione Medicamentorum. 1786.

[3] Wootton: Chronicles of Pharmacy, 1910.

Pontus in Asia Minor, born about the year 134 B. C., who was one of the most troublesome foes the Roman Republic had to deal with. He was finally defeated by Pompey. This personage is said to have been a student of poisons, and was accredited with having invented or concocted an alexipharmac or antidote as a protection against them, which was named mithridatium after him. The legend goes to say that when conquered by the Romans, to escape capture he poisoned his wife and daughters and then took poison himself; but according to the story he had so successfully immunized his body to all sorts of poisons that his efforts at suicide proved unsuccessful and he had to call on one of his soldiers to dispatch him. Hence the origin of the term "mithridatism" or immunization against the effects of a poison through gradual administration of small doses of it. As the king of Pontus was accredited with having possessed especial skill in the production of medicines, his conquerer, Pompey, took care to ransack his medical writings and secure whatever he could. Thus, whether from Mithridates or not, a panacea bearing his name found its way into Roman literature and became very popular. Various modifications of it were later made, the most important of which was the so-called theriaca.

Theriaca was invented by Andromachus, the physician of Emperor Nero, and was devised as an improvement on mithridatium, which until then was the great antidote of Roman pharmacy. The most important difference between the two was the addition of vipers. The word "theriaca' comes from the Greek θηρίον, wild beast, or serpent, and has reference to its use as an antidote against snake bites. According to Galen, the virtues of this panacea were the following:

> It resists poison and venomous bites, cures inveterate headache, vertigo, deafness, epilepsy, apoplexy, dimness of sight, loss of voice, asthma, coughs of all kinds, spitting of blood, tightness of breath, colic, the iliac poison, jaundice, hardness of the spleen, stone, urinary complaints, fevers, dropsies, leprosies, the troubles to which women are subject, melancholy and all pestilences.

Though all this may seem a huge joke, all these virtues were accepted down to the seventeenth century, and many learned treatises were written on the subject. For some centuries various cities such as Constantinople, Cairo, Genoa and Venice gained the enviable reputation of manufacturing the most efficient theriaca. Later Venice overshawdowed them all; and the Venice theriaca, or as the word became corrupted, Venice *treacle*, was for a long time famous, and is found in the London Pharmacopeia as late as 1745. Our present word "treacle" is derived from this confection; in earlier English works, however, treacle signified much more than molasses, and was used metaphorically for the divinest blessings.

I am now going to quote the ingredients of theriaca, as given by Galen, first to illustrate the curious conglomeration of an enormous number of useless drugs, and secondly to point to the presence in it of opium, to which probably a great part of its virtues were due. The ingredients of this, as well as of mithridatium, were given in Greek verse, in order that they might be better remembered.

ELECTUARIUM THERIACALE MAGNUM

Root of Florentine iris, licorice, 12 ounces each; of Arabian costus, Pontic rhubarb, cinquefoil. 6 ounces each; of Ligusticum meum, rhubarb, gentian, 4 ounces each; of birthwort, 2 ounces; herb of scordium, 12 ounces; of lemon grass, horehound, dittany of Crete, calamint, 6 ounces each; of pennyroyal, ground pine, germander, 4 ounces each; leaves of laurus cassia, 4 ounces; flowers of red roses, 12 ounces; of lavender, 6 ounces; of St. John's wort, 4 ounces; of lesser centaury, 2 ounces; saffron, 2 ounces; fruit of amyris opobalsamum, 4 ounces; cinnamon, 12 ounces; cassia lignea and spikenard, 6 ounces each; Celtic nard, 4 ounces; long pepper, 24 ounces; black pepper and ginger, 6 ounces each; cardamoms, 4 ounces; rape seeds, agaric, 12 ounces each; seeds of Macedonian parsley, 6 ounces; of anise, fennel, cress, seseli, thlaspi, amomum, sandwort, 4 ounces each; of carrot, 2 ounces; *opium*, 24 ounces; opobalsamum, 12 ounces; myrrh, olibanum, turpentine, 6 ounces each; storax, gum arabic, sagapenum, 4 ounces each; asphaltum, opoponax, galbanum, 2 ounces each; juice of acacia and of hypocist, 4 ounces each; castor, 2 ounces; Lemnian bole, calcined vitriol, 4 ounces each; trochises of squill, 48 ounces; of vipers, of sweet flag, 24 ounces each.

Triturate the balsams, resins and gums in a sufficient quantity of wine to form a thin paste, and incorporate the whole with 960 ounces of honey.

Philonium was another famous antidote, invented by Philon of Tarsus, who is supposed to have lived in the early part of the first century of the present era. It is conjectured from an obscure passage in Pliny that this antidote was prescribed against an epidemic of colic or dysentery which occurred in Rome in Philon's time. Philonium was the original of the confection of opium which remained in the English pharmacopeias until 1867. In the Pharmacopeia Londinensis of 1746, the ingredients of philonium are given as follows: white pepper, ginger, caraway seeds, strained opium and syrup of poppies, the proportion of opium being 1 grain in 36 grains of the confection.

Diascordium, the last of the four officinal capitals, was a medicinal compilation by Hieronymus Frascatorius, a famous physician and poet of Verona in the early part of the sixteenth century, and is given in his book "De Contagio et Morbis Contagiosis." It was originally devised as a preventive of the plague. In the eighteenth century it became a popular household opiate and was frequently given to children for soothing purposes. The original formula, which was adopted in the first London Pharmacopeia in its integrity, mentioned among its principal ingredients cinnamon, cassia wood, scordium, dittany, galbanum, storax, gum arabic, *opium*, sorrel, gentian, Armenian bole, Lemnian earth, pepper, ginger, and honey. Later some of the ingredients were dropped, and the Edinburgh Pharmacopeia made it more astringent by adding catechu and kino. The mangled remains of this famous panacea are represented by the British and U. S. P. Pulvis Catechu Compositus, and Pulvis Kino Compositus.

LATER USES OF OPIUM

The compound powders of catechu and kino just mentioned are not the only relics of ancient opium compounds remaining in the British and our own pharmacopeias. The commonest pharmaceutic preparations of opium still in use are of antique extraction, and it may be of interest to devote a few words to them at this place.

Our tincture of opium or laudanum dates from Paracelsus (1490-1541). Paracelsus probably applied the name "laudanum" to several medicines, all of which contained opium. Thus one historian describes a *pill mass* which he designates as laudanum of Paracelsus, and which consisted of one-fourth of its weight opium, to which were added henbane juice, mummy, salts of pearls and corals; bone of the heart of a stag, bezoar stone, amber, musk, and essential oils.

Another laudanum, known as anodynum specificum of Paracelsus, was obtained by digesting opium, with orange and lemon juice, frog's sperm water, cinnamon, cloves, ambergris, and saffron. So much for the more ancient laudanum. The laudanum of the early London pharmacopeias was a pill mass, made of a mixture of opium, wine, saffron, castorum, diambrae, ambergris, musk, and oil of nutmeg. The principal liquid preparation of opium used in England a little later was the so-called Sydenham's laudanum. The formula was given by Sydenham in his work on dysentery in 1669-1672, and called for the following ingredients: strained opium, saffron, cinnamon, clover, and canary wine. About the same time, that is, at the end of the seventeenth century, another preparation known as Rousseau's laudanum was much in vogue on the Continent. This differed from the other laudanum in being a fermented compound, and was named after a Capuchin monk by the name of Rousseau. This holy man was sent from Rome to Paris to learn medicine preparatory to mission work in Asia, but became enamored with the subject and settled in Paris to practice the art of healing. He became a favorite with Colbert, the minister of Louis XIV; rooms and laboratory were provided for him in the Louvre, and Louis ordered the Faculty of Medicine to give him a degree.

The name "laudanum," attributed to Paracelsus, is supposed to be derived from the Latin *"laudandum,"* "something to be praised." According to some philologists it is related to gum labdanum or ladanum, from which a stomachic cordial was prepared in the middle ages. Others regard it as an abbreviation of the two words *laudatum opium*. Still others endeavor to find in it a corruption of the word *anodynum* with the article prefix, that is, *l'anodynum,* or *the* anodyne, and some latter-day punsters humorously refer to it in bad Latin *Lauda non!* "do not praise," which conveys more truth than poetry.

In the early part of the eighteenth century another celebrated opiate was the so-called "black-drop." Its inventor was one Edward Runstall of Auckland, and it was also known as Lancaster or Quaker's black drop. A formula for its preparation was as follows: Opium ½ pound; verjuice, 4 pints; nutmegs, 1½ ounces; saffron, ½ ounce. Boil, add two spoonfuls of yeast and set in a warm place for six to eight weeks; then decant, filter and put in bottles. This preparation was three times as strong as laudanum, and is the forebear of the English Acetum Opii.

Our other familiar friend and popular household anodyne, paregoric, originated with the elixir asthmaticum of Le Mort, professor of chemistry at the University of Leyden from 1702 to 1718. A modification of Le Mort's formula given in the London Pharmacopeia of 1721 was as follows: honey and licorice root, of each, 4 ounces; flowers of benjamin and opium, of each, 1 dram; camphor, 2 scruples; oil of aniseed, ½ dram; salt of tartar, 1 ounce; spirit of wine, 2 pounds. In the London Pharmacopeia of 1746, the name of it was changed to Elixir Paregoricum. In that of 1888 the official name became Tinctura Opii Camphorata. This preparation was also known as Tinctura Camphorae Co., and in the German Pharmacopeia as Tinctura Opii Benzoica. The word "paregoric" comes from the Greek παρηγορικός, which means "soothing" or "consoling."

Our official opium pills, or Pilulae Opii, are not a modern product but are descended from the old English Pilulae Soponis Co., or Pilulae Soponaceae, which in their turn are an adaptation of the long famous nostrum known as Matthew's Pills or Starkey's Pills. Starkey was a physician who invented them, and Matthew was a vender who sold them. The pills consisted of opium, soap of tartar, and a number of other trivial ingredients.

No account of the history of our opiates can be said to be complete without a reference to Dover's powder, and its originator, the adventurer and knight errant of English medicine, Thomas Dover. I shall not dwell long on the life of this interesting individual, especially as an account of him by Osler[4] has already been published. Born at Barton on the Heath in Warwickshire in 1660, he studied medicine, and in his youth lived at the house of the famous Thomas Sydenham. Many have probably read of how he later joined a privateering party, and led a life of adventure, roaming around the world; how the ship in which he was sailing rescued Alexander Selkirk, the man who lived alone on an island for over four years and who became the prototype of the famous Robinson Crusoe. When he returned to London and settled down to practice, Dover[5] wrote his "Ancient Physician's Legacy to his Country." In this work, in the chapter on gout, he gives the recipe for his "diaphoretic powder" in the following words:

> Take opium, 1 ounce; saltpeter and tartar vitriolated, each 4 ounces; liquorice, 1 ounce; ipecacuanha, 1 ounce. Put the saltpeter and tartar into a red hot mortar, stirring till they have done flaming. Then powder very fine. After that, slice in your opium; grind to a powder and mix. Dose, from 40 to 60 or 70 grains in a glass of white wine posset, going to bed, covering up warm, and drinking a quart or three pints of the posset while sweating. In two or three hours at furthest the patient will be free from pain.

This will suffice for the commoner opium preparations.

THE ALKALOIDS

Let us now turn from this region of pharmaceutic romance, superstition and mysticism, to some of the achievements that characterize the pharmacy of the nineteenth century, and which mark the beginning of rational therapeutics.

As is well known, throughout the middle ages it was the great ideal of all chemists, or rather alchemists and pharmacists, to search after essences, or quintessences of things, after the philosopher's stone, the elixir of life, etc., and it is natural to find that of all popular drugs opium should be the one especially tortured to give up its essence. Therefore the various laudanums and extracts of opium, and preparations known as magisteria opii, were products of activity exerted in that direction.

Toward the end of the eighteenth century it was a universal belief that plants could elaborate products of only an acid or neutral nature, and that alkalies were substances of a very different character, related more to the metals and exhibiting metallic properties. It was not until the beginning of the nineteenth century, with the discovery of the alkaloids, that this conception was shattered, and it is significant that the first alkaloid to be discovered was the chief active principle of opium—morphin. The honor of this epoch-making discovery belongs to a German, Friedrich Wilhelm Adam Sertürner. Sertürner was born July 19, 1783, in Paderborn. He became an apothecary and chemist at Einbeck in Hanover, Germany, where he did his most important work, and moved later to Hameln, where he died, Feb. 20, 1841.

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[4] Osler, W.: Bull. Johns Hopkins Hosp., 1896, vii, 1.

[5] Dover, Thomas, M. B.: The Ancient Physician's Legacy to His Country, London, 1762.

Sertürner began his investigations of opium in 1803, and published the first report of his studies in 1805, when he announced his discovery in opium of an acid, *Opium-Saüre*, which he later named "meconic acid," and which he explained was combined with an alkaline base which he called morphium. In a second communication, in 1816, he gave a detailed account of his work, and described the chemical as well as the pharmacologic properties of morphin, which he tested out on himself, and came near losing his life.

"I flatter myself," he wrote, "that chemists and physicians will find that my observations have explained to a considerable extent the constitution of opium, and that I have enriched chemistry with a new acid (meconic) and with a new alkaline base (morphium), a remarkable substance which shows much analogy with ammonia." Sertürner's discovery excited so much interest, and its importance was regarded as so great, that in 1831 the Institute of France awarded to him a prize of 2,000 francs "for having opened the way to important medical discoveries."

Next in importance to morphin in point of quantity, the opium alkaloid narcotin was discovered really before morphin, in 1803, by the French pharmacist Derosne, who obtained crystals of what proved to be narcotin while diluting a sirupy aqueous extract of opium. These crystals became known as *sel d'opium* of Derosne. The basic or alkaloidal character of the body, however, was not established until 1817 by Robiquet, another pioneer in alkaloidal chemistry. The same Robiquet was the discoverer of the next very important opium alkaloid named codein, in 1832. The discoverer of the next opium alkaloid was another illustrious chemist, Joseph Pelletier, whose name is familiar to us from the active principle of male fern, pelletierin. Pelletier was born in Paris in 1788, and died there in 1842. A son of an apothecary, he was from his earliest days engaged in chemical and pharmaceutic studies, and later became a director of the school of pharmacy in Paris. He was the first to isolate a large number of alkaloids. In 1832 he discovered the opium alkaloids narcein and oxymorphin, and in 1835, with Thiboumery, another alkaloid, thebain. Pelletier was also the discoverer of strychnin, and together with Caventou, of brucin; quinin, and chinchonin, together with Magendie of the at present interesting emetin, together with Corriol of aricin, together with Thiboumery of pseudomorphin, together with Couerbe of picrotoxin, and together with Pelleton of berberin. Since his time opium has become a nidus for a large number of alkaloids, and promises to yield a few more. Up to the present, according to Winterstein and Trier,[6] opium has yielded besides protein bodies, sugar, gum, resin, salts, and organic acids, twenty-two different alkaloids of which the following is a list: morphin by Sertürner in 1804; narcotin by Robiquet in 1817; codein by Robiquet and narcein by Pelletier in 1832; thebain and pseudomorphin by Pelletier and Thiboumery in 1835; papaverin by Merck in 1848; cryptopin in 1857; gnoscopin in 1878 and xanthalin in 1893 by T. and H. Smith; codamin, laudanin, meconidin, and lanthopin by Hesse in 1870; laudanosin and hydrocotarnin in 1871, and protopin in 1872 also by the same investigator; oxynarcotin, by Beckett and Wright in 1875; tritopin by Kander in 1890; laudanidin by Hesse in 1894, and lastly pseudopapaverin and papaveramin by the same man in 1903.

Besides the primary opium alkaloids, a large number of derivatives of them have been made, which we need not enumerate here. Let me but mention apomorphin, apocodein, heroin, dionin, and peronin.

All these chemical individuals have been analyzed, their empiric formulas established, and an attempt, at least in case of some of them, has been more or less successfully made to determine their structure. Along with this chemical work, which forms one of the most brilliant chapters of modern chemistry, a great deal, though by no means complete or sufficient, physiologic and pharmacologic work has been done with them.

Only within the last few years, the work of Straub, Faust, Bürgi, Sahli and others has marked a still further step in our knowledge of their therapeutic properties. These authors have shown that not only have the various opium alkaloids individually definite pharmacologic actions, but that also still other effects can be produced by combining them with each other.

Thus if we trace the history of opium from its earliest beginnings to the brilliant researches of recent years, if we but compare the analytic and synthetic, chemical, physiologic and pharmacologic studies of the same old drug with the fantastic and puerile effusions on the subject of our medical predecessors, we cannot help being impressed with the long strides forward which medicine has made; yet, on the other hand, our very recent studies on opium and its alkaloids serve but to emphasize the more our meager knowledge of the subject and the still greater task before us.

As I close, I must recall the pregnant words of the philosopher: "And I saw indeed that wisdom hath the advantage over folly, as great as the advantage of light over darkness." "The wise man hath his eyes in his head, while the fool walketh in darkness"; but (and that is what we should all remember) "I myself perceived then also that the same occurrence may befall all of them." (Ecclesiastes ii: 13, 14).

One-Minute Biographs.—The subject of to-day's sketch is claimed equally by chemistry, biology, medicine, industry, agriculture and economics, and all are deeply indebted to him for substantial scientific contributions. Chemistry is his debtor for throwing a flood of light on the nature of isomerism, and thereby laying a secure foundation for our present conceptions of structural chemistry. Biology is his debtor for effectively disposing of the theory of spontaneous generation and for demonstrating fermentation as a vital phenomenon. Medicine is his debtor for establishing the relation of bacteria to disease, and for fundamental contributions to the science and practice of immunity. Agriculture is his debtor for his brilliant work in devising a protective vaccine against anthrax, a dread scourge of cattle and sheep. Industry is his debtor for epoch-making discoveries in fermentation which provided a sorely needed scientific foundation for the wine industry, and for his work in discovering the cause of the silkworm blight whose control saved the silk industry in France from destruction. Economics is his debtor for the knowledge which made possible the introduction of canned foods, a step which has wrought profound economic changes throughout the world. With all the world so largely his debtor, let us revere the name of Louis Pasteur, benefactor of mankind.—*Weekly Bull. Dept. Health*, New York City.

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[6] Winterstein and Trier: Die Alkoloide, Berlin, 1910.

A NEW OPERATIVE TREATMENT FOR SELECTED CASES OF CEREBRAL SPASTIC PARALYSIS *

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This paper is merely the report of the operative treatment of sixty-five cases of spastic paralysis showing intracranial pressure by an ophthalmoscopic examination. These sixty-five operated cases are the ones selected as being suitable for the operation from the examination of 201 cases of spastic paralysis, that is, one in about every three cases examined. Although only a little more than a year has elapsed since the first operation, which was performed in June, 1913, yet our results have been so gratifying and even startling, that we feel justified in presenting the progress of the cases treated by us up to the present time. Naturally, sufficient time has not yet elapsed to permit us to say whether the improvement in our cases will be a permanent one or not; and yet, in view of the pathologic lesions producing this type of spastic paralysis, we do not see why the improvement should not become more and more marked as the children grow older.

Let us emphasize first, that we are *not* operating on the mentally deficient, the constitutionally inferior and idiots in the hope of restoring them to a normal mentality; and secondly, that we are not operating on microcephalic children in the belief that the brain will develop and become normal by enlarging their cranial capacity (a belief long exploded); and thirdly that we are not operating in cases of spastic paralysis due to a lack of development and malformation of the cortex of the brain and the pyramidal tracts—cases forming at least one-half of the total number of spastic paralyses—the so-called Little's disease, in which a cranial operation will do no good,* and from the very pathology of which a cranial operation can be of no benefit to the patient. On the other hand, we *are* operating in those cases of spastic paralysis giving a history of difficult labor with or without instruments, in which on opthalmoscopic examination the definite signs of increased intracranial pressure are to be seen on the fundus of the eye; that is, only those cases of spastic paralysis which show definite signs of increased intracranial pressure, whether this condition is associated with impaired mentality (and it very frequently is as the result of prolonged pressure on the cortex of the brain) or whether the size of the head is unusually small or unusually large. If in the latter cases there is an increased intracranial pressure, then that pressure should be relieved in the hope that the spasticity will lessen and the mentality be improved. Naturally, the most satisfactory and desirable cases for operation are the ones with slight impairment of the mentality, but these cases are rare when the intracranial pressure has been present for several years; much more commonly do we find a more normal mentality in those cases of lack of development and malformation of the pyramidal tracts, unless very extensive.

The condition of spastic paralysis results most frequently from a lesion of the brain occurring before birth, during birth or shortly after birth. It is characterized by more or less complete paralysis of the part affected, and is associated with a stiffness or spasticity depending on the extent of the involvement of the pyramidal tract; this hypertonicity produces muscular contractures and deformities, usually flexor in type, with a corresponding overstretching of the opposing muscular groups, usually the extensors. In mild cases, however, the spasticity may be so slight as to cause little or no deformity, but merely an awkwardness of the part affected. Frequently, athetoid movements of the arms and legs may be observed, and epileptiform attacks, commonly of the jacksonian type, may occur.

As the child grows older, not only do the spasticity and its resulting contractures increase in a large percentage of cases, but also the mentality of the child becomes impaired, and this impairment continues until the child may be considered a defective, or still further an imbecile, and only too frequently an idiot.

Little, if anything, has been done to improve permanently the condition of spastic paralysis, and we offer our observations in the hope that they may lead to a more satisfactory solution of the treatment of these cases. Our attention was first centered on the importance of relieving the increased intracranial pressure as a means of lessening the spasticity and improving the mentality of these children, by a decompression operation performed by one of us at the Nassau Hospital, Garden City, Long Island.

The case, referred by Dr. L. B. Rogers, was one of a child, aged 9 years, who after an easy delivery was apparently normal in every way until the ninth month of age, when it suddenly had a series of epileptic attacks; after these attacks had subsided, it was observed that there was a total left hemiplegia with exaggerated reflexes; the left arm and left leg became spastic and gradually assumed the flexor contractures so typical of these spastic cases. Three years ago, the patient had another series of convulsions and since that time these convulsive seizures of greater and lesser severity have continued almost daily. The mental impairment was moderate. Every method of treatment had practically been given up as useless. Last June, another series of convulsions began and during the four days preceding the examination of the patient, 302 attacks had occurred; the child was in a condition of status epilepticus—one convulsion following another; the almost continuous administration of chloroform was of little value. In addition to the typical left spastic hemiplegia, the patient had at this examination double choked disks, as revealed by an ophthalmoscopic examination—that is, a high intracranial pressure; the pulse was 54 and the respiration was very irregular and of the Cheyne-Stokes type. As artificial respiration and oxygen were being used, a right subtemporal decompression was advised in the hope that a relief of the increased intracranial pressure might improve the condition of the patient. The operation was performed at the Nassau Hospital, Garden City, June 18, 1913. No anesthetic was necessary—the patient being unconscious. On incising the dura, which was exceedingly tense, the cerebrospinal fluid spurted to a height of 6 inches; the cortex was edematous and swollen, and on enlargement of the opening upward, a fibrous mass, apparently the residue of an old cortical hemorrhage, was exposed, lying on the cortex and extending upward beneath the margin of the decompression opening. As the condition of the child was bad, I decided to remove the mass at a later operation. Owing to the mere relief of the intracranial pressure, the child became conscious at the end of the operation and an uneventful recovery occurred, the child leaving the hospital on the eleventh day after operation. The striking feature of the case, however, was the gradual lessening of the spasticity and of the contractures of the face, arm and leg, and this improvement continued until the child began using the leg freely and the left arm and hand for picking up articles for the first time in its life; there was also a definite mental improvement. The improvement in this case has been continuous.

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* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

* The preliminary report of this work appeared in The Journal Nov. 29, 1913, p. 1982; at that time, the operation had been performed in only twelve cases.

The thought then occurred, "Why not do a decompression operation in those selected cases of spastic paralysis having a possible hemorrhage on the brain and showing any signs of intracranial pressure?" And so we began having the eyes of spastic children examined carefully with an ophthalmoscope for signs of increased intracranial pressure. It was very surprising to ascertain that of the cases examined, a large number did show mild though distinct signs of intracranial pressure—that is, a dilatation of the retinal veins, and a hazy edematous blurring of the nasal margins of the optic disks; many of them showed even mild signs of old secondary optic atrophy—rather whitish disks and the physiologic cup shallow from scar tissue formation. We then began to select for operation such cases having these definite signs of increased intracranial pressure, especially the extreme cases and the ones which had received the usual treatment of tenotomies, tendon lengthenings, alcohol injections, braces, massage, etc. Since then, we have operated in 65 cases, most of them being of the extreme type, and the results have been very gratifying. Of these 65 cases 34 were diplegics, both arms and legs being affected; 11 were paraplegic, only the legs being involved, while the remaining 20 cases were hemiplegic—the leg usually being more affected than the arm of the one side. Epilepsy in its various forms was present in 26 of these 65 cases; the improvement in 7 of these 26 epileptic patients has been complicated because the epilepsy has continued but in a less severe degree.

Six of our patients operated on have died and each of them within ten hours after the operation; four of these were under 2 years of age, of the extreme diplegic type, emaciated and therefore very poor operative risks; it seems that in them any alteration of the high intracranial pressure and circulation was sufficient to upset the patient—the temperature rising to 108 degrees within two hours after the operation; possibly, a too rapid escape of the cerebrospinal fluid interfered with the circulation of the basal ganglia and therefore the high temperature resulted. We are now controlling this loss of cerebrospinal fluid by elevating the head and shoulders of the patient according to the rate of flow and with much better results; it is an interesting observation that the temperature in these cases can be either raised or lowered by elevating or lowering respectively the head and shoulders.

Not only has there been a lessening of the spasticity of the arms and legs affected in these cases selected for operation, but there has been a definite amelioration of the mental condition of the patient to such a degree that we obtain the cooperation of the child in the carrying out of the after-treatment—a very important advantage of this operation. Naturally, the younger the patient is at the time of operation, the better the prognosis; that is, the longer the general and local increased intracranial pressures have persisted, just so much more will the delicate nerve cells be compressed, their blood-supply interfered with and therefore the cells themselves impaired.

The ideal time for the operation would be immediately after birth; then, merely a small opening need be made to allow the subdural blood to flow out in liquid form with little or no resulting impairment of the cortex. However, it is extremely rare for a definite diagnosis to be made at this early date—the impairment usually not being ascertained until several months later when the child is from 9 to 12 months of age. It is to be hoped that routine ophthalmoscopic examinations of the fundi in suspected cases following difficult labor will be of great assistance.

METHOD OF PROCEDURE

In those cases of spastic paralysis of the hemiplegic, paraplegic or diplegic type, with a definite history of difficult labor with or without the use of instruments, in which, on ophthalmoscopic examination, signs of intracranial pressure are shown in the dilated retinal veins and a blurring and haziness of the optic disks, especially of their nasal halves, a large right subtemporal decompression is performed to relieve the intracranial pressure. If the intracranial pressure is extremely high and remains high after the operation, a left subtemporal decompression is performed the following week, the operative recovery requiring only a week or ten days.

The operation itself consists of a vertical incision over the side of the head from 2½ to 3 inches in length extending from the parietal crest down to a point overlying the zygomatic arch and just anterior to the external auditory meatus; that is, to the lowermost point of the cranial cavity. The fibers of the temporal muscle are separated longitudinally and then a small opening in the squamous bone, made by the Doyen perforator and burr, is enlarged by rongeurs to a diameter of from 2 to 3 inches. The dura is now incised in a stellate manner, allowing the brain to expand, and in this way the increased intracranial pressure is relieved. The dura is *not* resutured and the bone is not replaced.

The usual pathologic findings are definite supracortical fibrous or cystic formations resulting from a cortical hemorrhage occurring at birth. These pathologic lesions are treated according to the individual findings—removed, punctured, the interior touched with some mild corrosive to cause an obliteration (great care being taken that no excess of the corrosive fluid escapes over the cortex) and very frequently, merely let alone; that is, more damage to the cortical cells may be done by endeavoring to remove the lesion and therefore it is wiser not to attempt it. The decompression operation is performed merely to offset the effects of the pressure of this hemorrhage with cystic formation, and the resulting spasticity and mental impairment. In four cases, the hemorrhagic cyst was cortical and subcortical; naturally, the local nerve cells and their fibers must have been damaged, so that a physical improvement cannot be expected in that part of the body controlled by the cells or fibers destroyed; however, the cells and fibers at the periphery of the lesion are merely impaired functionally by the local pressure of the cyst and the cystic formation, so that the functional impairment in these cases has improved very much.

The after-treatment, briefly, consists in the correction of deformities by tendon lengthenings if necessary, or merely stretchings of the contracted muscles, the maintenance of corrected positions through the employment of especially adapted braces, skilled massage and faradism, particular attention being given to the weakened and overstretched muscle groups. A careful, systematic course in muscle training is carried on daily.

The improvement in our cases selected for operation has been so marked—not only a lessening of the spasticity, but also a definite amelioration of the mental condition of the patient—that we believe a cranial decompression is indicated in those cases of spastic paralysis showing intracranial pressure by the ophthalmoscopic examination; of those cases of spastic paralysis which we have examined, about 40 per cent. have shown signs of intracranial pressure, and are, therefore, in our opinion, cases that can be very much improved; all of our operated cases had previously had the routine orthopedic treatment of massage, muscle training, tendon operations, etc., with little or no permanent improvement. The operation of cranial decompression is not a formidable procedure for one trained in neurologic surgery; all of our patients have improved (four only slightly), and we have had six deaths. The anesthetic should be administered by an expert; cyanosis and coughing are very dangerous complications, especially after the dura has been opened. Dr. C. S. Hunt used a mixture of ether and oxygen in all of our cases reported in this series, and in only two of them was any difficulty encountered; fortunately, the dura had not been opened. Dr. Hunt has observed the tendency of patients to become conscious as soon as the dura is incised and the intracranial pressure relieved; it is important to deepen the anesthesia, therefore, just before the dura is incised in order to prevent coughing, etc.

For lack of space, we report in this paper only every sixth case in which operation was performed, since the preliminary report in November, 1913, until May, 1914; the record of each case in detail will be published later.

Case 12.—Erma, aged 26 months. Diagnosis: Left spastic hemiplegia. Right supracortical hemorrhagic cyst. Operations: First, right subtemporal decompression; *second*, left subtemporal decompression.

History.—Admitted to Stern's Private Hospital, Sept. 29, 1913. Referred by Dr. George E. Brewer. Family history negative. Four older children well and strong. Personal History: Fifth child; nine months' baby; difficult labor requiring the use of instruments. Patient remained "quiet" for three days, then began to have convulsive twitchings of head to the right, lasting from three to five minutes; then quiet, possibly for the entire night. Since then, irritable "spells," crying for five hours at a time. Paralysis and flexor contractures of the entire left side of the body, including the face. No convulsions since. Poor appetite; constipated with much mucus in stools. Has never attempted to walk or talk; apparently oblivious to its surroundings. Past Treatment: Massage, electricity and general hygiene. No improvement; spasticity and flexor contractures becoming worse.

Examination.—Typical left spastic hemiplegia of face, arm and leg. Leg flexed and adducted; fingers clenched, especially thumb. Right eye diverges slightly. Poorly nourished child with definite mental impairment. Fundi: Dilated retinal veins and blurring of nasal halves of optic disks, especially the left disk, which is distinctly pale. Reflexes all increased on left side; left Babinski. Unable to talk a word. Has never walked or attempted to walk or crawl. Wassermann test negative.

First Operation.—Oct 8, 1913. Right subtemporal decompression. Usual incision and bone removed; no complications. Dura very thick—⅛-inch—and under marked tension. Cerebrospinal fluid spurted half an inch—a large amount escaping. The pia-arachnoid adhered to the dura, and when the dura was widely incised, a large bluish cyst an inch in thickness extended upward beyond the superior border of the decompression opening where the cortex appeared normal; this cyst extended downward to the base of the skull. It was bluish white and contained many new vessels. The cyst was punctured and a portion of its outer wall excised; much straw-colored fluid escaped so that the underlying cortex now became convex instead of concave; the cortex was pale but otherwise normal. Usual closure; no complications. There was some oozing of cerebrospinal fluid from the lower angle of incision for eight days (the longest in any case). On the second day after operation, it was noticed that the left hand was no longer clenched. All sutures removed on the seventh day after operation. Oct. 24, 1913, sixteen days after operation, the patient was discharged surgically.

Nov. 1, 1913, twenty-three days after operation, there was much improvement. Patient is now using left hand and tries to pick up things (right hand being tied). Is walking some (supported). Says "Ida" (the name of her nurse). Notices objects and her surroundings.

Dec. 1, 1913, fifty-three days after operation, there is great improvement. Uses left hand; can extend fingers. Walks well, but still needs a "finger-support." Says "Papa, Mama, Daddy" and a number of other words.

Dec. 20, 1913, seventy-three days after operation, the child is walking alone; drags left leg slightly. Decompression area is tense; fundi still reveal dilated retinal veins and some blurring of disk margins.

Jan. 15, 1914: Still improves, especially mentally; can now say several more words. Difficult to advise second operation on account of the great improvement, but it will relieve the pressure effects of the cyst still more.

Second Operation.—Jan. 24, 1914. Left subtemporal decompression. Usual incision and bone removed; no complications. Dura rather tense, but not so thickened as on right side. When the dura was incised, much cerebrospinal fluid escaped; an old hemorrhagic cyst formation extending down over upper one-fourth of the decompression opening was exposed; it was very shallow, however, and had been practically absorbed, little more than a thickened discoloration being present, so that there were no clinical signs of its presence. (Mighty interesting in that the paralysis clinically indicated a hemorrhage only on the right cortex—the hemorrhage over the left cortex being practically absorbed). Usual closure. All sutures were removed on the sixth day after operation; the child was discharged surgically Feb. 8, 1914, 12 days after operation. Treatment: massage and exercises as before operation.

Feb. 24, 1914: Walking, but left leg still drags. Mentally much brighter. Fundi: Optic disks pale but clear; retinal veins not enlarged.

May 4, 1914: Patient uses left leg very well now; impairment of left hand much less so that she uses it now. Mentally very bright. Has learned a number of German words from her nurse.

July 10, 1914: Improvement continues both physically and mentally.

Sept. 2, 1914: Marked improvement. Patient is walking with but a slight limp and uses the left hand fairly well. Speaks several small sentences now. Child is becoming well nourished; no digestive disturbances.

Remarks.—The rapid improvement in this case was simply amazing. It seems that children aged 2 years or less improve much more quickly than the older ones; this is what we should expect from the pathology of the condition—the cortex not being primarily damaged but merely its function impaired by the pressure of the overlying hemorrhage and resulting cyst formation. Naturally, the longer it remains, the greater the impairment.

Case 18.—Willie, aged 8 years. Diagnosis: Mild spastic diplegia. Supracortical hemorrhagic cyst. Operations: First, right subtemporal decompression; second, left subtemporal decompression.

History.—Admitted to the New York Orthopedic Hospital, Jan. 4, 1914. Referred by Dr. R. A. Hibbs. Family history negative. Two brothers and two sisters all well. Personal History: Third child; nine months' baby; very difficult labor requiring the use of instruments. Child "semiconscious" for one week. Scarlet fever, whooping-cough and diphtheria as a child. At 10 months of age, it was noticed that child was unable to stand and that it did not try to walk. When 2 years of age, child would drag the left foot, which had become stiff as well as the left hand; this stiffness has increased. Rather stupid and apathetic; memory is poor. No convulsions. Past Treatment: Massage and exercises; tenotomy of left Achilles tendon. No permanent improvement.

Examination.—Typical spastic diplegia, especially affecting the left side, with flexor contractures. Reflexes all increased, greater on left side; double Babinski (interesting observation in view of the lesion found at operation). Right leg was used rather awkwardly. Left internal strabismus. Fundi: Definite dilatation of retinal veins and distinct blurring along the nasal margins. Mentally impaired. Simon-Binet test: Mentally, a child of 5 years of age. Moving picture, Oct. 12, 1914.

First Operation.—Jan. 5, 1914. Right subtemporal decompression. Usual incision and removal of bone, which was very spongy, thick and vascular. Dura under high tension and very vascular; when it was incised a hemorrhagic cyst was exposed, at least 1 inch in thickness, pressing down on a pale anemic cortex. Much cerebrospinal fluid escaped under tension. Outer wall of cyst removed. Usual closure; no complications. Postoperative recovery negative. All sutures removed on the sixth day after operation. Spasticity of left arm and leg lessened and patient seemed brighter mentally. Decompression area was tense.

Second Operation.—Jan. 31, 1914. Left subtemporal decompression. Usual incision and removal of bone, which was not so vascular or spongy as on the right side. Dura under tension, and on being incised, the upper half of the exposed cortex was covered by a cystic formation half an inch in thickness; many adhesions. (Cause for Babinski on the right foot and also the awkwardness of the right foot. Other than this, no signs of the hemorrhage on this side clinically.) Usual closure; no complications. All sutures removed on the seventh day after operation.

Feb. 21, 1914: Condition at Discharge: Spasticity very much improved; mentally much brighter. Treatment: Massage and exercises as before the operation. March 6, 1914, Moving picture.

June 7, 1914: Marked improvement mentally and physically. Patient walks with only a slight limp; very little spasticity, though left Babinski still persists. Mentally, much brighter. July 27, 1914, moving picture.

Sept. 9, 1914: Improvement in every way. Was irritable formerly, but now has an even disposition—does not cry as he used to. Walks very much better—scarcely a limp. Better in school; has skipped one grade. Memory better. Reads better. Talks better—expressing himself better. Formerly left arm would hang dead, now he uses it at table and in carrying things. No headache. No convulsions. Left eye, formerly "crossed," now straight so that it is not noticeable.

Decompression openings are half closed with new bone formation; slight bulging. Left arm does not differ from the right—apparently normal. Knee jerks: Left greater than right; no Babinski can be elicited. No adductor spasm. Simon-Binet test of mentality: A child of 7 years of age.

Remarks.—The mental improvement has been a most gratifying one in these cases; besides making it possible for these children to take care of themselves better, the cooperation of the patient is obtained in carrying out the after-treatment of the exercises of muscle training, etc.—a very important factor in their treatment. The improvement of both convergent and divergent types of strabismus has been observed in a number of our cases.

Case 24.—Theodore, aged 12 years. Diagnosis: Right spastic hemiplegia. Left supracortical hemorrhagic cyst. Operations: First, left subtemporal decompression; second, right subtemporal decompression.

History.—Admitted to Polyclinic Hospital, Jan. 18, 1914. Referred by Dr. John A. Wyeth. Family History: Three sisters and two brothers alive and well; three died at birth, all labors being instrumental. Personal History: Youngest child (the ninth). Nine months' baby; instrumental delivery. Left eye was swollen and completely closed for several weeks after birth. Child cried from birth up to 8 months of age. Always slept with right eye open. Walked at the age of 3 years with stiffness of right leg; right arm also stiff. Talked at 12 months—has always been "smart." When 1 year old, patient had five convulsions in one day; unconscious; it was then noticed that the right side was paralyzed. When 3 years of age, patient had one short convulsion; never has had any since. Eyesight blurred and very poor.

Past Treatment: A patient of many hospitals—massage, exercises, tenotomies—with no permanent improvement.

Examination.—Well-developed white child. Typical right spastic hemiplegia with flexor contractures. Reflexes: Right increased; right Babinski. Flexor contractures of right leg at knee; 1 inch shortening of right leg. Fundi: retinal veins dilated; entire nasal halves of optic disks obscured. Disks pale with shallow physiologic cups due to new tissue formation; a mild secondary optic atrophy. Moving picture, Oct. 12, 1913. Simon-Binet test, Jan. 18, 1914: Mentally a child of 9 years of age.

First Operation.—Jan. 19, 1914. Left subtemporal decompression. Usual incision; much bleeding in rongeuring bone, apparently due to sinuses in bone, and to adhesions of dura to bone. Dura tense, but not much cerebrospinal fluid escaped. Very dark-reddish hemorrhagic clot on cortex, ½ inch in thickness, extending beyond the bony margins of decompression. Large cortical vessels. Usual closure; no complications. All sutures removed on the seventh day after operation.

Second Operation.—Jan. 29, 1914, ten days after first operation. Right subtemporal decompression. Usual incision; moderate bleeding in bone. Dura under fair pressure. Cortical vessels enlarged; pia-arachnoid "sweated." At upper area of cortex, definite signs of old hemorrhage—even on this side homolateral with paralysis—practically all absorbed and thus showing no clinical signs of its presence; numerous adhesions were severed between arachnoid and dura. Usual closure. All sutures removed on the sixth day after operation.

Feb. 22, 1914: Condition at Discharge: Arm and leg straighter. Can extend right wrist and right fingers. Walks with a limp due to shortening of right leg. Treatment: Massage and exercise, as before operations. March 6, 1914, moving picture.

April 18, 1914: Much improvement, especially in the arm; easily bends right hand at the wrist.

June 7, 1914: Improvement continues. July 27, 1914, moving picture.

Sept. 9, 1914: Marked improvement. "Uses arm much better; can grasp things and use them, which was impossible before the operation. Patient can see much better than before. Is not irritable and nervous." Mentally "very bright." No convulsions. A much more intelligent looking child.

Moderate flexor contracture of right leg with apparent anatomic shortening of the tendon; a tenotomy may be necessary; walks better. Patient can now extend the right wrist; uses the fingers much better. Decompression areas tense; partially covered with a layer of bone which bulges slightly. Reflexes increased on the right side; no Babinski. Fundi:

Retinal veins normal; some new tissue formation about the disk margins; disks rather pale. Simon-Binet test: Mentality is that of a child of 11 years of age.

Remarks.—Although this patient is 12 years of age, yet his improvement has been very definite. Naturally, the younger the children, the greater the improvement to be expected from an early operation. The oldest case has been of a man aged 21; his improvement has been less marked than the younger patients having lesions of similar extent and pressure.

Case 30.—Martha, aged 10 years. Diagnosis: Spastic diplegia of extreme type. Supracortical hemorrhagic cyst. Operation: Right subtemporal decompression.

History.—Admitted to Polyclinic Hospital, March 24, 1914. Referred by Dr. Royal Whitman. Family history negative. Three younger children well and strong. Personal History: First child; nine months' baby; difficult labor requiring the use of instruments. Entire head contused; laceration of scalp behind left ear extending forward to top of head. "Doctor thought child would die." Blue for one week; could not swallow; comatose. On the third day, general convulsions began, lasting two hours until child was thought "dead." Gradual improvement until 2 years of age. From 2 to 7 years of age, patient had "spasms"—became "blue around mouth," and twitching of left side of body until entire body became stiff and rigid—more on right side; no loss of consciousness. These spells lasted two or three minutes and occurred only when child was irritated or frightened. Patient has never walked. No diseases of childhood. Constipated during past three years. Past Treatment: All kinds of treatment; braces at 2 years of age for one year. Osteopathy for one year; electricity for one year. Massage, exercises and gymnastics for past five years; no improvement.

Examination.—Typical spastic diplegia of extreme degree with flexor contractures of arms and legs; left side worse; extreme adductor spasm. Poorly developed. Speech is very difficult to understand. Respiration is noisy and difficult because of a laryngeal spasm. Right pupil larger than left. Fundi: Dilated retinal veins; marked blurring of nasal halves of optic disks. Tongue large and protrudes; continuous dribbling and drooling of saliva. Reflexes all increased, left possibly more; double Babinski. Mentality much impaired. Simon-Binet test: A child of 6 years mentally. Moving picture, March 6, 1914.

Operation.—March 26, 1914. Right subtemporal decompression. Very difficult case for anesthesia; impossible to pass tube into larynx because of spasm. Usual incision; bone vascular and spongy. Dura was much thickened and very tense so that cerebrospinal fluid spurted out under high pressure. A hemorrhagic supracortical cyst was exposed extending beyond the decompression opening; it tended to protrude on account of the very high pressure. While a small portion of the outer wall of the cyst was being incised the child "went bad"—respirations became labored and spasmodic, and brain pulsated feebly about 30 or 40 per minute. Heated oxygen; artificial respiration; hot coffee by rectum; improvement. Usual closure in haste. While applying dressings and bandage, child again ceased to breathe and it seemed that child was dead; edema of lungs apparently. After ten minutes of artificial respiration, rhythmic tongue traction, oxygen, atropin and camphor in oil, the child improved; patient was "blue"—no corneal reflex—pupils widely dilated and no pulse for half an hour, but child gradually rallied. Three doses atropin, 1/100 grain, 5 minims of camphor in oil and 3 ounces of hot black coffee by rectum *after child reached the ward.* Six hours later, child was in good condition. Conscious. Temperature, 100. Pulse, 130. Respirations, 20. After the operation respiration slightly improved. All sutures removed on sixth day after operation.

April 5, 1914: Condition at Discharge: Ten days after operation, respiration quiet now and not difficult. Spasticity much lessened; patient can use the hands much better. Treatment: Massage and exercises as before the operation.

May 10, 1914: Patient walking with finger-support but with difficulty; less spastic. Speech much improved.

July 27, 1914, moving picture.

Sept. 14, 1914: Much brighter mentally. Legs and arms much more limber. Walks alone 20 to 25 feet. No convulsions. Less irritable and restless. Less spasms of legs and arms. Can go up and down stairs alone now, which she could not attempt before. Talking improved but the breathing is about the same. Has not had massage for past two months but has improved right along.

Marked lessening of the spasticity and contractures; left Achilles tendon still shortened—undoubtedly an anatomic shortening of tendon itself owing to its long contracture; a tendon lengthening is advisable. Reflexes are still increased; double Babinski not so definite. Fundi: Retinal veins still slightly dilated and some edema still remains along the nasal margins of the optic disks. Marked improvement mentally. Simon-Binet test shows a child of 7 years of age.

Remarks.—A second decompression on the other side of the head is advisable in this case to lessen further intracranial pressure. The operation has been delayed in the hope that the respiration will still improve and thus lessen the risk of the operation.

Case 36.—Sidney, aged 32 months. Diagnosis: Spastic diplegia. Supracortical cystic formation. Operation: Right subtemporal decompression.

History.—Admitted to Polyclinic Hospital, May 3, 1914. Family History negative. One sister, aged 5 months, alive and well. Personal History: First child; nine months' baby; difficult labor—"three days and three nights"; non-instrumental. Child has been "weak" from birth; no convulsions. Child did not lift its head until 16 months of age. Has never talked or walked. Cries constantly and moves arms and legs continuously when awake; "never quiet." Does not understand; does not notice. Very "rigid" at times. Little strength in legs; more strength in arms. No convulsions. Fontanels not closed at 26 months. Child becoming "stiffer" and more "foolish." Past Treatment: Massage, electricity, exercises, etc., at several hospitals; no improvement.

Examination.—A typical case of spastic diplegia. Child lies in bed "stiff and straight"—eyes turned up to the ceiling; frequent jerking of arms and legs. Cries constantly. Reflexes: Knee jerks increased; double Babinski present. Fundi: Dilated retinal veins; nasal halves of optic disks obscured. Mentally: Apparently an imbecile. Moving picture, March 6, 1914.

Operation.—May 7, 1914. Right subtemporal decompression. Usual incision and bone removed; no complications. Characteristic "cracks" in bone which oozed freely. Dura moderately tense; not thickened, although whitish and rather pale. Cortex bulged through dural opening and much cerebrospinal fluid escaped; edematous pia-arachnoid ½ inch in thickness, forming a sort of "blanket" over cortex. Cortex pulsating normally at end of operation. Usual closure; no complications.

Recovery uneventful. All sutures removed on the sixth day after operation. Child much quieter.

May 14, 1914: Condition at Discharge: Seven days after operation, child cries only at times. Legs do not seem so stiff. Reflexes still increased; double Babinski present. Fundi: Retinal veins less dilated; only the nasal margins of the optic disks are blurred. Treatment: Daily massage and exercises as before the operation.

July 10, 1914: Marked improvement, both physically and mentally. Child is now trying to walk; seems to notice his surroundings.

July 27, 1914, moving picture.

Sept. 15, 1914: Improved in every way. Now walks alone. Says a number of words. No convulsions. Mentally very much better; now plays with toys; cries very infrequently.

Decompression area bulging slightly; tense. Reflexes: Knee jerks increased; no Babinski now present. No adductor spasm. Fundi: Retinal veins less dilated; no edema of the optic disks but some new tissue formation along its margins.

Remarks.—The improvement in this case is most apparent. For a child of 32 months of age which has never talked or walked, and then four months after the operation to be walking alone and even talking a number of words, is truly remarkable. As there are still signs of increased intracranial pressure as shown by the tense decompression area and by the ophthalmoscopic examination, a bilateral decompression is advisable. The absence of a definite walled-off cyst at the site of the decompression opening and merely an edematous pia-arachnoid of varying thickness producing, with its many adhesions, a cystic formation or blanket overlying the cortex has been observed in a number of our cases; the relief of the general intracranial pressure, however, apparently suffices.

Case 42.—Mollie, aged 7 years. Diagnosis: Left spastic hemiplegia. Supracortical cystic formation. Operation: Right subtemporal decompression.

History.—Admitted to Polyclinic Hospital, May 10, 1914. Referred by Dr. John A. Wyeth. Family history negative. Two younger children well and strong. Personal History: First child; nine months' baby; breech delivery; very difficult labor but no instruments used. Baby "dead" for half an hour; artificial respiration. Nursed with difficulty; cried continuously. When 8 months old, it was noticed that child did not use its left arm and left leg, which were "stiff." At 3 years of age, child began to walk but only a few steps and then would fall; would trip constantly. Cannot run even now, trips frequently; left leg drags. No convulsions. Child feeds itself, but is unable to use left hand. Patient was not allowed in public schools as authorities said it was "crippled"; the School for Crippled Children refused to admit it because patient was "nervous." Past Treatment: Massage, exercises and electricity during past four years; no improvement. Moving picture, March 6, 1914.

Examination.—Typical left spastic hemiplegia with flexor contractures. Reflexes increased on left side; left Babinski. Fundi: Dilated retinal veins; distinct haziness of nasal margins of optic disks. Mentality impaired; speech fair. Simon-Binet test: Mentally a child of 4 years of age.

Operation.—May 11, 1914. Right subtemporal decompression. Usual incision and bone removed; no complications. Dura tense but not vascular or apparently thickened; no adhesions. Cerebrospinal fluid spurted 2 inches and much fluid escaped. Cortex edematous, with many adhesions, producing a cystic formation half an inch in thickness; large cortical veins extended downward vertically over temporosphenoidal lobe. Cortex tended to bulge under such great tension that bony opening was enlarged upward 1 inch and dura likewise opened; cortex protruded so much that a ventricle puncture was attempted but not successful. Usual closure; no complications. All sutures removed on the seventh day after operation.

May 24, 1914: Condition at Discharge, thirteen days after operation: spasticity has lessened. Brighter mentally. Treatment: Massage and exercises as before operation.

July 6, 1914: Marked improvement. Patient walks with but a slight limp, the heel touching the floor. Uses the left hand well. Mentality much improved; speech good. July 27, 1914, moving picture.

Sept. 14, 1914: Improvement continues both physically and mentally. Walks much better; does not fall now as formerly; very slight limp. Mentally brighter; more observant. Simon-Binet Test: A child of 5 years of age. Uses left arm well. No convulsions. "Another child," mother says.

Decompression opening not closed; bulging slightly. Knee jerks: left greater than right; no Babinski. No adductor spasm; no shortening of the Achilles tendon. Fundi: Negative; optic disks have assumed distinct margins; normal pinkish color.

Remarks.—Here again, the improvement has been very rapid. Within four months, the child is walking with the heel touching the floor, the left arm is being used and the mentality has so changed that a Simon-Binet test records an improvement of one year. In this case, the unilateral decompression has apparently relieved the intracranial pressure to such an extent that a bilateral decompression will not be necessary.

CONCLUSIONS

Naturally, we do not believe that all cases of spastic paralysis should have a cranial decompression; in some mild cases tendon lengthenings alone are sufficient, and this is especially true in the absence of mental impairment. But those selected cases of spastic paralysis, particularly of the hemiplegic and paraplegic types, which show signs of increased intracranial pressure by an ophthalmoscopic examination, are the cases that can be very much improved by such a procedure. The cases of agenesis and maldevelopment of the cortex of course *cannot* and *do not* show signs of increased intracranial pressure, and are therefore easily excluded by an ophthalmoscopic examination; besides, the cases of lack of development of the cortex and pyramidal tracts are frequently premature babies, being born the seventh or eighth month, so that a careful history is very important.

We are having moving pictures taken of the patients before operation, and at regular intervals after the operation, in order that the physical impairment of posture and gait may be accurately recorded.

Likewise, a Simon-Binet test of the mentality is being recorded before operation and at regular intervals after operation; the mental improvement in our cases has been very impressive.

A lumbar puncture is being made before operation in order to estimate the intraspinal pressure as a means of corroborating the signs of increased intracranial pressure as shown by an ophthalmoscopic examination.

A Wassermann test of both the blood and cerebrospinal fluid is made in all suspicious cases.

We wish to repeat that this paper is merely a report of work being carried on to improve the condition of selected cases only of spastic paralysis. It is by no means a cure, and possibly the improvement in our selected cases is only a temporary one—we cannot tell. But from the pathology of these selected cases in which operation has been performed and the general continuous improvement which has resulted and is still progressing, we feel justified in making a report of the work in the hope that it may throw some light on the treatment of this very pitiful condition.

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OCCURRENCE OF RETURN CASES OF SCARLET FEVER AND DIPHTHERIA

EXPERIENCE OF THE CHICAGO DEPARTMENT OF HEALTH SINCE THE INTRODUCTION OF A SYSTEM OF CLASSIFIED QUARANTINE

G. B. YOUNG, M.D.
Commissioner of Health
CHICAGO

In the fall of 1913 the department for the first time published a complete handbook for the bureau of medical inspection, and in that connection made quite extensive changes in the methods hitherto employed in connection with quarantine.

Owing to unavoidable delays in connection with the budget, etc., the changes were not put fully into effect until March 15, 1914.

Our experience with classified quarantine from March 15 to November 1 has been quite instructive. As a preliminary explanation let me give a summary of the methods of quarantine now enforced by the department.

> The result sought is to avoid the imposition of all restraint upon the family of the patient when consistent with effective isolation of the patient and "carriers," the object being, in brief, to quarantine the public out and to quarantine the patient in. To this end the following rules will be enforced:

lated individual is exposed to infection, that is, if live bacteria find their way into his body, they are readily destroyed and will not multiply. Naturally, if the army of invaders is excessive, or the defense too slight, infection will arise in spite of the prophylactic measure. Fortunately, such instances are exceptional. The protection is therefore explained on a bacteriolytic, and to a less degree, on a bacteriotropic basis. From clinical experiences it has been shown that immunity persists even after these immune bodies cannot be demonstrated any longer (Cole[13]).

The *prophylaxis attained by the injection of Besredka's living sensitized typhoid vaccine*, cannot, if sensitization is complete, be explained on identically the same principles, for, as soon as the sensitized bacteria enter the normal system, they combine with the complement of the blood and are broken up. The agglutinating and bacteriolytic antibodies and the complement fixation bodies are therefore either not produced at all or only in very small quantities; consequently, the reliance for protection must be placed on the bacteriotropic or phagocytic activity, stimulated by the liberated central substance of the broken-up bacteria, the so-called endotoxin. The fact that the bacteria are alive does not necessarily mean that they are harmful, because, as was mentioned above, they are destroyed by the organism immediately after injection. The relative excellence of the sensitized method over the original Wright method has not been definitely established, but the fact that Besredka and Metchnikoff[14] strongly advocate it, is an important point in its consideration.

It may be in place here to consider a problem which has suggested itself to me, but which I have thus far been unable to carry out. If the injection of ordinary vaccine causes mainly a bacteriolytic reaction, and the administration of sensitized vaccine mainly a bacteriotropic response, would it not be advisable in prophylactic immunization to inoculate individuals with both sensitized and non-sensitized vaccines? In this way a combined form of immunity would be attained. As experimental basis for this suggestion I have shown that if the serum from rabbits immunized with non-sensitized bacteria is mixed in equal quantity with the serum from rabbits immunized with sensitized bacteria, this mixed serum was more curative for mice infected with typhoid bacteria than equal quantities of either serum alone. Naturally it will be necessary to establish the best method for such mixed immunization; whether the two vaccines should be administered separately and at different times or whether they should be given at the same time, as would be accomplished also by an incompletely sensitized vaccine.

In the therapy of typhoid fever the use of the ordinary non-sensitized vaccines has not met with as favorable results as for purposes of prophylaxis. Up to the present time several thousand cases have been treated (Watters,[15] Horner[16]), but the beneficial effects in the majority of instances are not sufficiently marked to warrant the employment of the vaccines as a routine procedure. Occasionally a striking crisis in the course of the disease is observed, but just as frequently an increase in the severity of the symptoms develops. Reports of instances in which the effects have been distinctly harmful (or even fatal) must also be considered.

When the biologic basis for the possible therapeutic value of vaccines in typhoid fever is asked, the answer is much more difficult and hypothetical than in the question of prophylaxis. Several factors are to be kept in mind. First, typhoid fever is a self-limited disease, running a typical clinical course and probably associated with definite phases of immunity to account for its characteristic picture and self-limitation. Second, the number of bacteria existing in a typhoid patient is very great; they circulate everywhere and stimulate the tissue cells continually, resulting in the formation of agglutinins, bacteriolysins, bacteriotropins, complement fixatives, etc.; these antibodies are apparently produced very slowly and are either not of sufficient number or of a nature suitable to overcome the infection quickly. It usually takes four weeks or more to ultimately accomplish this. The reason for this prolonged period may possibly be ascribed to the structure of the typhoid bacillus. As was said above, this bacterium belongs to a class of micro-organisms whose central substance, the so-called endotoxin, is liberated only after the bacillus has been broken up. This central substance also stimulates the formation of antibodies (antiendotoxins for purposes of designation) which are bacteriotropic in action and probably important elements in the curative process of typhoid fever.

Were it permissible to divide the phases of typhoid fever from an immunological point of view, as is usually done from the clinical aspect, one would assume that the first stage consists of the multiplication of the invaded typhoid bacilli. Then as a defensive reaction, the tissue cells stimulate the formation of antibodies (bacteriolysins, agglutinins and but few bacteriotropins). The next phase sees the numerous bacteriolysins attack the bacteria, sensitize them and with the aid of the complement the micro-organisms are broken up and their endotoxins liberated. The latter thus freed further stimulate the tissue cells with the result that other protective bodies (antiendotoxins) are produced in sufficient numbers to prevent any harmful effects and finally to help overcome the infection. Naturally, these very schematic stages are not sharply limited and do not fall within definite periods of time. Sluggishness or absence of the proper reaction on the part of the tissue cells at any stage is followed by a protraction of the disease or even death death by infection if the bacteria multiply and are no broken up due to insufficient response by the bacteriolysins, or death by intoxication if marked bacteriolysis has occurred, or has occurred so quickly that the liberated endotoxins are not in turn neutralized by sufficient antiendotoxins.

Keeping this explanation in mind, one can readily observe that the injection of *ordinary vaccines* in typhoid fever aims at nothing more than what th body is already doing with all its power, namely, th production of antibodies for the breaking up of th bacteria, the liberation of their endotoxins and th ultimate manufacture of antiendotoxins. There ma be cases in which the body cells are inactive and ar stimulated to activity and production of antibodie only after the inoculation of the vaccine. Here th ordinary bacterins are of undoubted aid.

As a general rule, however, it is best to relieve th sick body as much as possible of any active reactio During an infection the tissue cells are less responsiv than during health, especially if the disease be a severe and prolonged one. That is why an efficient serum (passive immunity) would be the ideal form of specific therapy. Sensitized vaccines possibly hold a position between serum therapy and ordinary bacterin treatment. In the first place, they might save the system from the strain of producing the primary antibodies for the destruction of the bacteria, and second, this provision might hasten the stage of liberation of the endotoxins and the stimulation of the antiendotoxins, an important step in the recovery from the disease.

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[13] Cole: Ztschr. f. Hyg. u. Infectionskr., 1904, xlvi, 371.

[14] Besredka: Bull. de l'Inst. Pasteur, 1910, p. 241; *Ibid.* 1912, p. 527. Metchnikoff and Besredka: Ann. de l'Inst. Pasteur, 1911, xxv, 193.

[15] Watters: Med. Rec., New York, 1913, lxxxiv, 518.

[16] Horner: Boston Med. and Surg. Jour., June 25, 1914, No. 26.

With these ideas in view, I undertook the study of the effect of sensitized typhoid bacteria as a form of active immunity in the therapy of typhoid fever.

Preparation of Sensitized Vaccine.—Three strains of typhoid bacilli that had been isolated from the blood of patients at the hospital were used for preparing the vaccine. Agar cultures of each strain were grown for twenty hours; the profuse growths were washed off with sterile normal saline solution, about 2.5 c.c. for each agar slant. This mixed suspension was sealed in a sterile tube, which was then submerged in water at 60 C. for one hour. This generally sufficed to kill the bacteria. The sterility was tested in the usual manner. The exact total quantity of the emulsion was noted. The strength of the vaccine was standardized at this point of the preparation, that is, before rather than after the immune serum had been added, for I found it more difficult for purposes of standardization to obtain an even distribution of the bacteria (on the counting slide) after the bacteria had been sensitized (agglutinated). Wright's[17] classic method of standardization was employed.

For sensitization I used the immune serum obtained from the same three (then convalescent) patients from whom the bacteria used for preparing the vaccine were isolated. (Their serums had a strong agglutination and complement fixation titer.) In this way it was certain that the antibodies would certainly fit the bacteria, as they both came from the same source; in other words, complete sensitization was attempted. The same object can be accomplished by using the serum from an animal (goat or horse) that had been immunized with the strains of bacteria from which also the vaccine is to be made. The serum was inactivated at 56 C. for one-half hour before being added to the bacterial emulsion. Two c.c. of serum for each 1 c.c. of bacterial emulsion were used. The mixture under cover of toluol was left for twenty-four hours at incubator temperature not exceeding 37 C., and was frequently shaken. At the end of this time the agglutinated bacteria were gently stirred and then centrifugalized for five minutes. The supernatant fluid was pipetted off, more sterile saline solution added, the emulsion again shaken and again centrifugalized. Once more the supernatant fluid was removed and finally the same quantity of saline solution added as was employed before for washing off the bacterial growths from the agar slants. In this way the standardization estimated previously from a sample of unsensitized vaccine held good for the sensitized preparation. The concentrated emulsion after being stirred and shaken thoroughly to make an equal, fine suspension, was finally diluted with one-half per cent. phenol solution so that each cubic centimeter contained 2,500 million sensitized typhoid bacteria.

Dosage.—The dosage of typhoid vaccines for therapeutic purposes is far from definitely established. As a general rule, however, it may be said that bacteria can be given in much larger doses when sensitized than if non-sensitized. The author found that guinea-pigs inoculated intraperitoneally with double the lethal dose of non-sensitized dead typhoid bacilli would die within ten hours, while the same quantity of sensitized bacteria was well tolerated. Similar results were recently obtained by Cecil.[18] No fixed therapeutic dose of either non-sensitized or sensitized typhoid vaccine has been adopted. In the present series of cases, 500 millions of sensitized bacteria were employed as the standard dose, both for the first and subsequent inoculations. Naturally, one had to be guided by (a) the severity of the illness, (b) the age of the patient and (c) the reaction from the inoculation. Thus, very sick individuals were given only 250 million bacteria. The dosage in children should be regulated according to the weight, 150 pounds being taken as the weight corresponding to 500 million bacteria.

Frequency of Inoculations.—Usually two to four inoculations were necessary until the temperature became normal; as a rule, one inoculation (250 millions) was administered during convalescence with the aim of preventing a relapse. The interval between inoculations was five to seven days, or even longer. It must be remembered that with non-sensitized bacteria, the larger the dose of vaccine, the longer must the interval between the inoculations be. This rule does not apply as strictly to sensitized vaccine, nevertheless 500 million bacteria is a large dose, and more frequent repetition was not deemed advisable. Future experience should guide us in this direction.

Reactions from Inoculation.—Both local and systemic reactions were exceedingly slight. Sensitization in general tends to diminish local reactions.[19] This has been demonstrated for the tubercle bacillus by Fritz Meyer, who uses a sensitized bacilli emulsion (S. B. E.), and also by Citron for the bacilli of mouse typhoid and swine pest, in which instances marked infiltration following the inoculations was avoided by sensitization of the micro-organisms. Besredka noted only very slight local reactions following the prophylactic inoculation of sensitized typhoid bacilli. In my cases a small, red, infiltrated area about the size of a quarter usually appeared around the points of injection within twenty-four hours after the inoculation and persisted for one to two days. In some cases the local reactions were larger, about 3 inches in diameter, but never were they as severe as is observed after the prophylactic administration of the ordinary vaccine. As for systemic reactions, no definite manifestations of a negative phase, that is, increase in the severity of clinical symptoms, were evident.

Results.—In a consecutive series, seventeen cases of typhoid fever were treated with the sensitized vaccine as soon as the diagnosis was definitely established. In the majority of instances this was the second week of the disease. The usual other indications in the treatment of typhoid fever, such as sponge baths or tub baths, rectal irrigations, etc., were not neglected. Of this series, only one patient died. The latter had developed a large, deep, spreading abscess of the thigh and scrotum requiring operation. Four patients had relapses. One patient had several very severe intestinal hemorrhages, the first following about thirty-six hours after the first vaccine inoculation. The subsequent vaccine inoculations, however, were well borne, so that it would be unfair to assume the principle of *"post hoc ergo propter hoc."* With this possible exception, no manifestations of a negative phase were observed and no other complications noted. Only in two out of the seventeen cases did the temperatures subside acutely, reaching normal forty-eight to seventy-two hours after the vaccine inoculation; in the great majority, the temperature did not go any higher, but began to show remissions, coming down to normal gradually. It would be futile to tabulate the results of the treatment in reference to any other individual symptoms, as such detailed differences should only be based on a very much greater material. On the whole, the impression was gained that the inoculated patients ran what might be termed mild courses with comparatively few complications. I am fully aware how guarded one should be about the results of any form of specific therapy in a disease like typhoid fever. Normally, all types of illness may exist. Clinicians have frequently observed that during some typhoid seasons the patients will present mild infections without any special treatment whatever. One could attribute beneficial effects to vaccine treatment with certainty only if rapid improvement or crisis in the course of the disease would set in soon after the inoculation. Such acute changes can be expected more often by treatment with a specific *serum* than with a *vaccine*, for by the former (passive immunization) antibodies are injected ready for neutralizing the poison; while in the latter instance, the antibodies must first be manufactured by the tissue cells. This ever-existing factor in vaccine therapy makes it absolutely necessary to start the treatment in typhoid fever as early in the course of the disease as possible, at a time when the reactive power of the individual is still responsive and unimpaired by the infection.

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[17] Citron-Garbat: Immunity, Blakiston's Son & Co., 1914, p. 210.

[18] Cecil: Paper read before the New York Serological Society, Oct. 9, 1914.

[19] It is interesting to note in this connection the recent finding of Jobling that addition of homologous serum to bacteria lessens the occurrence of anaphylaxis, an observation already made by me in 1910.

SUMMARY

In summary it may be said:

1. The treatment of typhoid fever by sensitized typhoid bacteria offers a more rational therapy from an immunologic point of view than by the ordinary non-sensitized vaccine.

2. The repeated inoculation of large doses of sensitized vaccine even in very sick patients, was not attended by any harmful effects or a distinct negative phase; the general course of the disease seemed milder and the complications less; the occurrence of a crisis in the infection took place in a small percentage of cases, the improvement usually being gradual. Perhaps more striking results will be attained by a larger number of smaller doses more often repeated.[20]

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[20] The patients referred to were treated in 1911, but publication was deferred until a series could be treated by smaller and more frequently repeated doses. This was not, however, possible.

Geographic Distribution of Diseases.—In certain diseases, of which the cause or means of spread is unknown, morbidity reports show their geographic distribution and varying prevalence and the conditions under which cases occur. This information has great potential value in attempts to ascertain their causes and means of spread.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914.

GUIDES IN VACCINE THERAPY

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Since the opsonic index variation method proved to be practically unsuited as a guide in the general application of vaccine therapy, most users of vaccines have not attempted to discover individual indications as to dosage, but have established a general routine initial dose, to be increased by a certain amount at a certain interval, and have persistently carried out their program as long as the treatment was adhered to. For this reason one object of the present article is to gather and describe such symptoms and manifestations as there is reason to believe give clue to that which takes place in the body following vaccine administration, and which may reliably guide to individual case variation of both dose and interval.

In general there has been a tendency to overdo and abuse this form of treatment which, in many instances, when properly handled, proves of immense value; and through frequent bungling and total disregard of the principles involved there is great danger that it will be brought into disrepute with the profession at large. To aid in counteracting this I am offering the record of my experience and interpretation of results obtained by other physicians for whom I have prepared vaccines, and I feel certain that the facts noted will be found so much in line with observations which all who have used these agents must have made—although, perhaps, they may not have paused to analyze them — that their truth and value will be readily understood, and may help in guiding aright others with less experience in this line.

It has been truly said that it is as wrong as it is useless to attempt to convince through argument, but that one's duty is to offer evidence and let the unprejudiced convince themselves. This principle applies very strongly to those who, despite what one would think are insuperable objections, make use of stock vaccines. No one for a moment would imagine that an attack of measles, although known to confer great specific immunity, could aid in preventing or in overcoming a typhoid infection; and yet if we employ a stock vaccine, in at least ninety-nine instances out of a hundred we follow a similar procedure. Let any one who has fixed on a variety of stock vaccine for use in a given case look up the possible bacteriology of the disease process which he proposes to treat, and then calculate his chances of striking, even by name, the guilty organism, let alone the particular strain active — which may even be one as yet unrecognized by science — the last consideration a factor which so often confuses exact bacteriologic diagnosis and serum therapy, but which is entirely avoided in vaccine treatment when autogenous products are used.

The fact that a given stock is composed of a number of strains cannot reassure, since at least all but one would be given needlessly and could not but burden, if they did not seriously injure, the patient's reactive mechanism — as in the case of the rabbit dosed with colon bacilli in order to render him susceptible to organisms to which he is normally immune, an effect which could be produced by the use of any stock vaccine on the market. Besides, the polyvalence of most vaccines relies solely on difference in source and not on actual known biologic differences of their constituent micro-organisms, so that many are polyvalent in name only. Furthermore, not entirely understanding what makes a difference in strain, or even the number of such that may exist, or, in fact, that they may not be as illimitable as the variations in the conditions affecting their cultivation, we can easily imagine the great odds that possibly exist against hitting the nail on the head with a dose of stock vaccine even in a disease in which the infecting organism has been named. A striking example, to be recalled in this connection, of the necessity for recognizing and allowing for differences is supplied by Flexner's experience with cerebrospinal meningitis, in which one antimeningococcus serum was found entirely ineffective when used to combat an infection with what was evidently a meningococcus of different nature, although morphologically and culturally identical, and which also, in turn, could be employed in the production of a serum specific for itself but totally without affinity for the other.

Although stock vaccines are thought to be cheaper and more readily obtainable than autogenous, such is not the case, for should it be desired to administer vaccine treatment it is rarely proposed to use less than ten separate injections per patient, and since such doses in the stock vaccines on the market cost 50 cents apiece (in separate syringes, the most popular form, and which, on the average, contain one dose each), there will be a total expense of at least $5, and then we are not considering the fact that any reasonable system of resistance-raising would require that two syringes (necessitating a double puncture, usually) often be used to make up most of the doses called for by the scale determined on, since no series of containers to be had is graduated in such increasing strengths as may advantageously be used, one after the other—even supposing that variation according to symptoms was not attempted.

The cheapest form in which stock vaccines in unit doses may be bought ordinarily is in ampule sets of four or of six, costing 25 cents per dose; but all vials of each set contain the same dose, which is either 100, 250 or 500 million bacteria, according to the set purchased, so that it is difficult to see what use could be made of a single set, while if all three sets were bought the cost would be at least $3, and the nuisance and waste of using part of an ampule at one time, and the whole of one and a fraction of another the next, so great as to make this form of no practical use. Besides, even by using all three sets, one ampule after the other, only three increases in dosage could be effected. Another form in which stock vaccines may be had, though usually only on order to the druggist, is a vial of 10 c.c., most frequently standardized at 100 million organisms per cubic centimeter and costing $3.50. Even with this a ten-dose graduated course, beginning with 1 c.c. and increased 10 per cent. each time, could not be obtained from one bottle of such a size.

These facts are recounted for the benefit of those who think that a stock vaccine is cheaper than an autogenous, the usual cost of which is $5, and which is always supplied in a quantity much greater than would ever be required, which keeps at room temperature for many months and whose dosage is easily measured with the ordinary hypodermic syringe. Such vaccines can also, of course, be put up in a series of single-dose ampules, with doses measured to order, but this is undesirable, since, as I shall show later, the size of any dose after the first should be regulated by a consideration of the effects of the preceding one.

The time required to secure stock vaccine is certainly not less in the long run than that lost in waiting forty-eight hours for the autogenous preparation, since a patient would hardly be kept waiting while the druggist was sent or telephoned to for a supply; and since this must be renewed later, sometimes through order on the wholesaler, the nuisance and time lost is often greater.

Another factor which is not unworthy of consideration is that the public each year is becoming more and more exacting as to the care and attention the medical man gives to his case, and a patient's first thought on being treated with a vaccine is of its modus operandi. When this has been explained the question next arises as to what determined the choice of organism; and when the patient learns, as he surely will soon or late, that this was mere guesswork when exactitude was possible, dissatisfaction and distrust arise. Further, since even with an autogenous vaccine of the trouble-making bacteria, improvement and cure is sometimes difficult to effect and long deferred, the physician himself, knowing full well the chances of missing the mark with a stock vaccine, is apt soon to lose confidence, switch about to another variety or discard the method entirely in disgust. On the contrary, everything connected with the procedure of bacteriologic diagnosis and the making of a special vaccine from the patient's own germ inspires confidence in both patient and physician, and even if the treatment should not prove so effective as hoped (which may rarely happen in suitable and well-managed cases), both would feel satisfied with the scientific accuracy of the effort.

I have sometimes known physicians to have a bacteriologic diagnosis made in a particular case and then to purchase and use a stock vaccine. Although such diagnoses are of variable difficulty and cost, there can hardly be an instance in which the additional preparation of an autogenous vaccine would involve appreciably more labor or expense. The really economical plan would be to ask that a vaccine be prepared, and this would usually entail a determination of the infecting organism.

A person's powers over a particular infection, when his system has not previously dealt with it, must depend on the applicability of enzymes formed by his cells for other purposes — such as the reduction of normal tissue waste — to the digestion of the new protein presented in the form of the attacking organisms. When sufficient bacterial substance is distributed within the body to reach and react with all the main sources of such enzymes (the cells of the lymphatic system), the maximum immunizing processes are operating, and we should certainly keep hands off, so far, at least, as vaccine therapy is concerned. Such conditions always obtain in acute infections, in which the infecting agent exists in the blood or is so disseminated in the other tissues as to reach most of the body's reactive cells (those prominent in inflammation, both of lymphatic and connective tissue origin), or, at any rate, the greatest number of them whose simultaneous activity is compatible with safety to life. In association with such infections continued fever seems to be a positive indication of this full-capacity working, and a daily remittant undoubtedly means the same. An equivalent condition sometimes occurs without noticeable temperature elevation, especially in pulmonary tuberculosis, in which, as a result of a stimulus to the antibodies from an injection of vaccine, such a large amount of *partially* digested, and therefore especially poisonous — as with peptone — bacterial substance is freed from the disease focus as to injure the tissues generally and thus to depress the reactive mechanism, lowering, at least temporarily, the general resistance to further development of the infection. Such a condition usually exists when extensive areas are involved in a chronic process, and advanced pulmonary tuberculosis may be regarded as uniformly presenting it.

Apart from the foregoing, every troublesome or dangerous infection not amenable to specific treatment, either medical or surgical, should be considered for the *immunity-raising methods of vaccine therapy;* provided, of course, that we know and can artificially cultivate the infecting agent. As vaccine treatment relies entirely on the vigor of the elemental tissues for the response which can alone make it effective, nothing that can be done to improve the general health can be neglected during its administration; and, above all, particular care must be exercised not to overdose, lest general poisoning of the system, as mentioned above in connection with advanced lung tuberculosis, or from the direct effect of the products of a partial digestion of the vaccine, might result.

It is to be remembered that when we inject a vaccine our purpose is similar to that of the wise mother who gradually increases the amount of starch and other solid food administered to her weaning baby in order gradually to develop powers of digestion never exercised before, but whose special enzymes, as with those elaborated parenterally in the fight against invading parasites, must have existed in some degree, as previously stated, even if only in the inactive state of the "ogens" — pepsinogen, etc. Also, we must not forget that if we give an overdose we are apt to injure the reactive mechanism, destroy or cripple the specific enzyme-producing cells, as might the mother her child's digestion by overfeeding, and in a similar way, through the injurious effect of direct contact with decomposition products, and thus do actual harm. Furthermore, we should understand that the element of time required in which to digest a given amount is even more important with a meal of vaccine, hypodermatically administered, than with one of beefsteak fed in the ordinary way, since, should the previous meal not be out of the way, the tissues would certainly be subjected to more bacterial substance at once than that contained in the last dose, and the patient suffer the effects of overdosage, parenteral indigestion, previously referred to.

PRACTICAL GUIDES

Having considered the general principles involved, we may now turn to the actual practice of vaccine therapy. Premising that we have an autogenous vaccine, efficiently prepared, skilled selection of the organism from the patient's supply, controlled by smear and culture, and care in sterilization of vaccine so as not to destroy the specific nature of the bacterial protoplasm through the employment of too much heat, we should first look for proof that the organism constituting the vaccine is at least active in, if not entirely responsible for, the lesions that we are to attempt to heal. Any individual becomes what is called sensitized to an infecting organism soon after it or its products gain access to the general circulation, and as thi means that his lymph contains newly developed (a previously explained) enzymes peculiarly adapted t the disintegration of the special bacterial protoplasm involved, no sooner does such protoplasm find its way into his tissues than it is attacked and more or less completely digested. The symptoms arising from this process depend directly on the activity and quantity of such enzymes that may be available, no less than on the quantity of bacterial matter introduced. If these two factors are so related that immediate and complete disintegration of the bacterial matter takes place, no symptoms whatever occur. But if the digestive process proceeds relatively slowly, as with our gastro-enteric digestion of albumin, through albumose *and peptone to amino-acid,* the poisonous action of the intermediate products shows itself in symptoms of inflammation at the point of introduction (local reaction); in fever, increased pulse rate and malaise generally (constitutional reaction), and in increased congestion and cellular activity at the foci of disease (focal reaction). Here we should especially note that no symptoms would be produced by the *first,* or perhaps the first two or three, injections of strange bacterial protoplasm (soluble toxins, as of the diphtheria or tetanus bacillus, are not included), as contradistinguished to what may be called familiar bacterial protoplasm, but that if such injections were continued, even of non-pathogenic bacteria (as proved by Thiele, Embleton and others), the individual would become sensitized just as he does in the course of an infectious disease, and all three varieties of reaction would develop. For these reasons a focal reaction following the first, or at least the second or third dose is particularly to be desired and watched for as convincing proof of the culpability of the organism constituting the vaccine in use. Of course, careful note should be made of any local or any constitutional reaction (which, with the same reservation, are also pathognomonic) as both corroborative of the first and as indicative of the strength of the body's response.

In default of any such reactions, even after the third dose, local and constitutional responses cannot be taken as diagnostic, nor even a focal one, unless it be so distinct and apart from a general disturbance as to exclude the possibility that it might be due only to the general sensitization to the vaccine plus the increased irritability shown by any inflamed tissue.

Of course, since a reaction of any sort presupposes a certain amount of resistance, there will be found individuals whose specific response is so slight (notably in some cases of acne) that it is only with much difficulty that any reaction whatever can be obtained. While this state explains the original development of the malady and the failure of automatic cure, it is very difficult to deal with and markedly points to the limitations of active immunization — we *can supply* the specific stimulus, but as yet have to leave the response to the body. Abnormally low temperature (mouth) is often a concomitant, if not an actual indicator of this condition, and after an injection of vaccine it frequently falls and remains still lower for days and even weeks.

Before giving a first injection of vaccine we should have record of both the patient's daily range of temperature and of pulse, so that we may judge how the vaccine acts in these particulars. The temperature (morning and afternoon) record should be kept up during the entire course of treatment, and the pulse rate recorded just before each injection and at the height of any reaction that may occur. Needless to say, written record should be made of the amount of vaccine injected and the character, extent and duration of all reactions following.

As regards the size of the first dose, although each case must be a law unto itself, depending principally on the danger of inducing a painful or a debilitating reaction, either on account of the location or the extent of the pathologic process, it is rare that one smaller than 100 million organisms need be given. If no reactive response or no prolonged lowering of temperature results by the end of a week, a 25 per cent. increase may be given, and so on for three or four periods; but just as soon as the slightest sign of reaction is apparent the same dose must be repeated, over and over again if necessary, till it ceases to elicit noticeable response, which will be when the special enzyme produced is plentiful and powerful enough immediately and completely to reduce the bacterial protoplasm, as previously explained. After the fourth dose, or after a repeated dose, fails to elicit a reaction, the increase should never be greater than 10 per cent. A prolonged depression of temperature indicates, as stated, deficient reactive ability, and should be met by a reduction of at least 90 per cent. in the size of dose and a subsequent increase of not over 10 per cent. each time whenever the temperature retains its level in accordance with the general rule given above. The interval between doses should never be less than a week (possibly better results could be obtained with two weeks), since, besides avoiding cumulative overdosage, we must give any increased specific resistance developed time in which to act on the organisms in the focus of infection, else we shall lose at least early improvement, which will be much interfered with if we use up all or most of the new enzymes with dose on dose following in too rapid succession.

As to the place of injection: It is to be remembered that our object is to secure the aid of the as yet unaffected body cells in the production of antibodies, and as a hypodermic dose of vaccine in the arm, for instance, exerts its main stimulating influence on the tissues in the immediate neighborhood and along the lymphatics to and including the nearest chain of glands, and as the immunity and therefore special enzyme formation persisting over this area at the end of a week or more is certainly greater than that in the normal tissues elsewhere, the next dose should certainly be placed accordingly—in as new a field as may be available. I therefore suggest that, besides the arms, the thighs be used, so that even the same lymphatic chain would not be restimulated more than once every four weeks. It has been demonstrated that an intraperitoneal injection of a given dose of vaccine in animals subjected to the experiment has a much greater immunizing power than when administered anywhere else. This is undoubtedly due to the fact that here opportunity exists for contact with the greatest number of the cellular elements of inflammation — the main antibody producers—so that the given plan, as it widens the area of subcutaneous dosage, tends to a similar effect and result.

In a suitable case, if we follow out the foregoing rules, we are almost certain to obtain improvement after ten or twelve injections, and when this improvement has nearly reached cure we should stop all vaccine, at least for a month or two, since improvement is usually particularly marked just after the arrest of a course of appropriate vaccine therapy—a further indication of the necessity of avoiding too short intervals between doses.

DIABETES MELLITUS TREATED WITH FLUID CULTURES OF THE LACTIC ACID BACILLUS

REPORT OF FOUR CASES

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Several references[1] have recently been made in medical literature to the successful treatment of diabetes mellitus by the administration of the lactic acid bacillus. It is desirable that the effects of this therapeutic agent should be confirmed; with this idea in mind, four patients were given the treatment.

The first three were observed at Gouverneur Hospital, service of Dr. John H. Huddleston. They were kept on a constant weighed diet for a considerable period before the treatment was begun. This diet was constituted as follows:

Breakfast: Three ounces of bacon; 2 eggs; 1 ounce butter; 1 ounce cheese; tea or coffee, with 2 ounces cream.

Midday: Ten ounces clear soup; 3 ounces lean meat; tea, without cream; 1 ounce cheese; 4 ounces vegetables (asparagus, beet-greens, cabbage, cauliflower, cucumbers, eggplant, lettuce, rhubarb, spinach, string beans, tomatoes or vegetable marrow).

Evening: Tea or coffee with 2 ounces cream; 3 ounces ham; 2 eggs; 1 ounce cheese; 1 ounce butter.

This diet is equal to a carbohydrate intake of 15 gm. Where the tables indicate a larger intake, the increased carbohydrate is in the form of white bread.

Continuing on the same diet, the patients were then given the lactic acid bacillus solution, the idea being to note any effect the medication might have on the disease as compared with the control periods. The subjects of these observations were kept in the same ward under the care of the same nurse. While in the hospital the urinary examinations were all made by one man. For the quantitative determination of glucose, Benedict's modification[2] of Fehling's method was used; for the qualitative demonstration of acetone, Legal's test; for diacetic acid, Gerhardt's ferric chlorid reaction.

Two of these three patients were treated in the metabolism division of the Vanderbilt Clinic, both before and after treatment at the hospital, and thus afforded additional data for observation. One of the three died while under treatment.

The protocol of a fourth case has been given me by Dr. H. O. Mosenthal.

PROTOCOLS

CASE 1.—H. B., man, aged 38, born in the United States. In 1910, three and one-half years previous to his admission to Vanderbilt Clinic, began to complain of great thirst and hunger, loss of flesh and strength. At that time he was circumcised on account of great itching under the foreskin. After the operation examination of the urine showed sugar. The patient was put on a moderately restricted diet by his physician, but did not improve; he lost weight, from 207 pounds in 1909 to 114 pounds in January, 1914, when he was admitted to Vanderbilt Clinic. From January 26 until April 20 he showed considerable improvement under dietary restrictions. April 29 he was admitted to Gouverneur Hospital and placed on the constant diet already quoted. The observations from May 8 to 15 serve as a control period, to contrast with the lactic acid bacillus period beginning May 15.

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[1] Beveridge, J. W.: Diabetes Treated with Lactic Acid Bacillus, New York Med. Jour., 1913, xcviii, 70. Blodgett, S. H.: Glycosuria and the Bulgarian Bacillus, Med. Rec., New York, 1913, lxxxiii, 1071. Horowitz, P.: The Action of Lactic Acid Bacilli on the Percentage of Glucose in the Urine of Diabetics, ibid., 1913, lxxxiii, 142; 1912, lxxxi, 468.

[2] Benedict, S. R.: The Detection and Estimation of Glucose in Urine, THE JOURNAL A. M. A., Oct. 1, 1911, p. 1193.

TABLE 1.—RECORD OF URINE ANALYSES IN CASE 1

Date, 1914	Urine in 24 hours							Fluid Culture, Lactic Acid Bacillus
	Volume, c.c.	Glucose, Per Cent.	Glucose, Gm.	Carbohydrate Intake	Carbohydrate Balance	Acetone	Diacetic Acid	
5/ 8	1,200	2.9	35	35	0	0	0	None
5/ 9	720	2.6	19	35	+16	0	0	None
5/11	1,020	2.27	23	35	+12	0	0	None
5/12	1,200	2.4	28	35	+ 7	0	0	None
5/14	1,680	2.1	35	35	0	0	0	None
5/15	1,020	2.7	28	35	+ 7	0	0	10 c.c. t.i.d.
5/17	1,650	2	33	35	+ 2	0	0	10 c.c. t.i.d.
5/18	1,500	1.7	25	35	+10	0	0	10 c.c. t.i.d.
5/19	840	3.1	26	35	+ 9	+	0	10 c.c. t.i.d.
5/20	1,470	3.33	49	35	—14	0	0	10 c.c. t.i.d.
5/21	1,020	2.4	24	35	+11	0	0	10 c.c. t.i.d.
5/22	900	2.6	23	35	+12	0	0	10 c.c. t.i.d.
5/23	720	2.9	21	35	+14	+	trace	10 c.c. t.i.d.
5/24	1,200	3.8	45	35	—10	0	0	10 c.c. t.i.d.
5/25	1,530	2.7	41	35	— 6	0	0	10 c.c. t.i.d.
5/26	1,680	2.5	42	35	— 7	0	0	10 c.c. t.i.d.
5/27	1,020	2.27	23	35	+12	0	0	10 c.c. t.i.d.
5/28	1,260	2	25	35	+10	trace	0	10 c.c. t.i.d.
5/29	1,320	2.17	28	35	+ 7	trace	0	10 c.c. t.i.d.
5/30	1,560	2	31	35	+ 4	+	+	10 c.c. t.i.d.
5/31	1,320	2.6	34	35	+ 1	+	0	10 c.c. t.i.d.
6/ 1	1,680	2.5	42	35	— 7	+	0	10 c.c. t.i.d.
6/ 2	1,500	.7	10	15	+ 5	+	+	10 c.c. t.i.d.
6/ 3	1,950	.4	8	15	+ 7	+	0	10 c.c. t.i.d.
6/ 4	1,860	0.0	0	15	+15	+	0	10 c.c. t.i.d.
6/ 5	1,380	0.0	0	15	+15	+	0	10 c.c. t.i.d.
6/ 6	1,980	0.0	0	15	+15	+	+	16 c.c. t.i.d.

Case 2.—A. S., man, aged 23, Russian, cutter by occupation, was perfectly well until September, 1913, when sugar was found in the urine during an examination for life insurance. Soon afterward he began to feel weak, to pass a great deal of urine, and to have an excessive appetite. There was also some pruritus, dryness of mouth and obstinate constipation. He did not lose much weight. His physician at that time gave him fluid culture of lactic acid bacillus for two weeks, without improvement; later he spent a few weeks in Roosevelt Hospital, where he felt better on a restricted diet. From February 9 until April 28 this patient attended the Vanderbilt Clinic, with only moderate improvement in his condition. April 28 he was admitted to Gouverneur Hospital. Table 2 gives the result of the observations in his case.

Case 3.—D. B., man, aged 42, born in Holland, electrician, was brought by ambulance to the hospital in a semiconscious condition, supposed to be suffering from alcoholism. He was at first very weak and listless and could be made to talk only with difficulty; also his statements were contradictory. From what he said it appeared that he had not known that he had diabetes, but that for eight months he had noticed that he passed a great deal of urine, was very thirsty, had a voracious appetite, and had grown progressively thinner and weaker. He had been much troubled by boils in different parts of his body. This patient was in the hospital during the entire period of observation. The diet was begun April 16; the control days are tabulated beginning May 7, on which date the patient had improved sufficiently to be out of bed.

Case 4 (Dr. Mosenthal's case).—G. B., clergyman, aged 52, refused to give a detailed history, saying it was of no interest whatsoever. The following facts, however, could be obtained: Three years before the present data were obtained the urine could be rendered sugar-free on green days, but by no other diet; traces of acetone and diacetic acid were present. Since that time the disease has made rapid progress, especially when the age of the patient is considered.

TABLE 2.—RECORD OF URINE ANALYSES IN CASE 2

Date, 1914	Urine in 24 hours							Fluid Culture, Lactic Acid Bacillus
	Volume, c.c.	Glucose, Per Cent.	Glucose, Gm.	Carbohydrate Intake	Carbohydrate Balance	Acetone	Diacetic Acid	
5/ 6	1,680	1.4	23	35	+12	0	0	None
5/ 7	2,100	1.6	33	35	+ 2	0	0	None
5/ 8	1,890	1.4	26	35	+ 9	0	0	None
5/ 9	2,040	1.9	38	35	— 3	0	0	None
5/11	2,520	2.5	63	35	—28	0	0	None
5/12	1,200	2.6	31	35	+ 4	0	0	None
5/14	2,490	2.7	67	35	—32	0	0	10 c.c. t.i.d.
5/15	2,280	2.08	47	35	—12	0	0	10 c.c. t.i.d.
5/17	2,400	2.27	54	35	—19	0	0	10 c.c. t.i.d.
5/18	2,850	2.27	64	35	—29	0	0	10 c.c. t.i.d.
5/19	2,400	2.6	62	35	—27	+	0	10 c.c. t.i.d.
5/20	2,280	2.8	63	35	—28	+	0	10 c.c. t.i.d.
5/21	2,130	2.6	55	35	—20	0	0	10 c.c. t.i.d.
5/22	2,520	2.5	63	35	—28	0	0	10 c.c. t.i.d.
5/23	2,760	2.7	74	35	—39	+	0	10 c.c. t.i.d.
5/24	1,500	3.1	46	35	—11	+	+	10 c.c. t.i.d.
5/25	2,400	2.9	69	35	—34	0	0	10 c.c. t.i.d.
5/26	1,680	2.5	42	35	— 7	0	0	10 c.c. t.i.d.

TABLE 3.—RECORD OF URINE ANALYSES IN CASE 3

Date, 1914	Urine in 24 hours							Fluid Culture, Lactic Acid Bacillus
	Volume, c.c.	Glucose, Per Cent.	Glucose, Gm.	Carbohydrate Intake	Carbohydrate Balance	Acetone	Diacetic Acid	
5/ 7	2,700	2.8	75	35	—40	+	+	None
5/ 8	2,250	3.1	69	35	—34	+	+	None
5/ 9	2,100	3.3	69	35	—34	+	+	None
5/11	1,920	4.5	86	35	—51	+	+	None
5/12	1,920	2.6	59	35	—24	+	+	None
5/14	1,380	3.8	52	35	—17	+	+	None
5/15	1,140	3.1	35	35	0	+	+	16 c.c. q.d.
5/17	960	3.8	36	35	— 1	+	+	16 c.c. q.d.
5/18	1,440	3.8	55	35	—20	++	++	16 c.c. q.d.
5/19	1,080	3.5	37	35	— 2	+	+	16 c.c. q.d.
5/20	1,020	3.1	31	35	+ 4	++	++	16 c.c. q.d.
5/21	1,080	3.1	33	35	+ 2	++	+	16 c.c. q.d.
5/22	900	2.7	24	35	+11	+	+	16 c.c. q.d.
5/23	?	3.1	..	..	...	+++	+++	16 c.c. q.d.
5/24	600	4.1	24	35	+11	+++	++	16 c.c. q.d.
5/25	1,560	3.3	51	35	—16	+++	+++	16 c.c. q.d.
5/26	900	2.9	26	35	+ 9	+++	++	16 c.c. q.d.
5/27	1,230	2.9	36	35	— 1	++	++	16 c.c. q.d.
5/28	1,410	3.5	49	35	—14	+++	++	16 c.c. q.d.
5/29	1,230	3.8	46	35	—11	++	++	16 c.c. q.d.
5/30	690	4.5	31	35	+ 4	+++	+++	16 c.c. q.d.
5/31	1,680	5.5	92	75	—17	++	++	16 c.c. q.d.
6/ 1	1,950	4.5	87	75	—12	++	++	16 c.c. q.d.
6/ 3	1,140	3.3	38	35	— 3	++	+	16 c.c. q.d.
6/ 4	1,260	2.5	31	35	+ 4	+	+	16 c.c. q.d.
6/ 5	1,200	2.7	32	35	+ 3	+	+	16 c.c. q.d.
6/ 6	1,050	3.1	33	35	+ 2	+	+	16 c.c. q.d.
6/10	960	2.9	27	35	+ 8	+	+	16 c.c. q.d.
6/11	720	3.33	24	35	+11	+	+	16 c.c. q.d.
6/13	1,440	0	0	35	+35	0	0	16 c.c. q.d.
6/14	1,320	0	0	25	+35	0	0	16 c.c. q.d.
6/19	*							

* Patient died.

COMMENT

In Case 1, during the control period of five days, there was an average daily carbohydrate balance of 7 gm. of glucose; during the following seventeen days, when the lactic acid bacillus culture was administered, the balance was reduced to 3.2 gm. This is so trifling that a change for the worse that it may be concluded that in this case the medication produced no result. The same may be noted in regard to the slight increase in acetone and diacetic acid.

On the other hand, an immediate beneficial effect is seen to follow the reduction of the carbohydrate intake from 35 to 15 gm. The glycosuria dropped to zero and stayed there, the carbohydrate balance remaining at plus 15. In two days a simple, slight dietary restriction accomplished what the lactic acid bacillus solution failed to do in seventeen days.

The sugar tolerance in Case 2 diminished slightly, and traces of acetone appeared, while the patient was taking the treatment. As in Case 1, only trifling changes for the worse were noted. The course of the disease may be considered to have been unaffected by the treatment.

Case 3 was the most severe of the three cases. The urine showed an acidosis practically all the time the patient was under observation. June 13 there was a sudden change in the urinary findings. The sugar and acidosis disappeared and the patient remained sugar-free for the next six days, when he died; but the acidosis reappeared during the last three days. Coincident with the changes in the urine, the patient's general condition grew rapidly worse. He went to bed and stayed there, lost his appetite and became very weak. His weight dropped from 97 to 87 pounds. He died in diabetic coma after being unconscious for six hours. The disappearance of the sugar and acidosis cannot be regarded as anything but an antemortem change in metabolism such as is often seen in such cases, and not a change for the better. The development of coma points to a lack of improvement.

It was expected that there would be an improvement in the general condition of these patients during the first part of their stay in the hospital, on account of the rest, strict dieting and more regular life brought about by hospital routine. After this improvement was established, the lactic acid bacillus treatment was begun and continued for a considerable period. No improvement could be observed during this treatment, clinically or in the urinary examinations.

The methods used in the determinations in Case 4 were those yielding accurate results: for glucose, Benedict's modification of Fehling's test; for total nitrogen, the Kjeldahl procedure; and for ammonia, Folin's method. The lactic acid bacillus medication was followed conscientiously for a month. During that period no marked variation for the better or worse occurred in the glucose tolerance, as evinced by either the glycosuria or the glucose-nitrogen ratio. If any change could be noted it was that the disease was more marked rather than ameliorated. The same holds true of the acidosis as shown by the ammonia figures, both absolutely and those of the percentage of ammonia nitrogen of the total nitrogen. In contrast to this, the figures of January 11 and 16 show that an oatmeal diet in a severe case of diabetes of this kind can accomplish more in therapy than the lactic acid bacillus.

All the urinary analyses cited are taken from days having similar dietary restrictions. The lactic acid bacillus period shows no improvement over the control day, January 11, nor does the following period, April 5, give any evidence that the course of the disease has been favorably influenced.

TABLE 4.—RECORD OF URINE ANALYSES IN CASE 4

	Urine in 24 hours									
Date, 1913	Volume c.c.	Specific Gravity	Reaction	Glucose, Per Cent.	Glucose, Gm.	Total Nitrogen, Gm.	Ammonia,* Gm.	Per Cent. Ammonia Nitrogen of Total Nitrogen	Glucose-Nitrogen Ratio	
1/11	3,000	1.028	Acid	2.5	75.0	21.8	2.6	9.9	3.5:1	Second of 2 green days†
1/16	2,940	1.017	Acid	1.0	29.4	14.2	0.6	4.4	2.1:1	Second of 2 green days
2/15	2,340	1.025	Acid	2.2	51.5	14.5	1.8	10.7	3.6:1	Green day following strict day‡
2/22	3,000	1.023	Acid	2.4	72.0	18.6	2.1	9.4	3.9:1	Green day following strict day
3/8	3,120	.....	.....	2.9	88.9	20.6	2.4	9.8	4.3:1	Green day following strict day
4/5	4,140	1.020	Acid	1.8	74.5	16.1	3.2	16.4	4.5:1	Green day following oatmeal day

* The qualitative reactions for diacetic acid (Gerhardt's reaction) and acetone (Legal's test) were of maximum intensity throughout. Sodium bicarbonate was administered during the period of observation. The dose of this drug, however, was constant, and therefore would affect the ammonia output equally on each day, and would not invalidate comparative values.

† A period of three oatmeal days followed the specimen of January 11; the diminished output of glucose and ammonia, January 16, are evidence of the benefit derived therefrom.

‡ From February 8 to March 9, 16 c.c. of the fluid culture of lactic acid bacillus was given three times a day.

CONCLUSION

The conclusion drawn from these four carefully observed cases of diabetes mellitus is that no improvement was effected by the administration of the fluid culture of the lactic acid bacillus either as to the glycosuria or the acidosis.

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The Phenomena of Sleep.—We are never unconscious during sleep; in sleep we have a transformed consciousness. Instead of the relation of the ego to his environment being maintained, as it is during waking hours, we have a complete change, in which the ego goes through thinking processes, but without the same feelings of relativity. Unquestionably thought continues; the direction of thought is altered. There is in dream consciousness hardly any, if any, effort to control the thoughts. The thoughts very largely control themselves. Our conscious life ought to consist of a continuously controlled and directed stream of thought by association. But in dream consciousness the thought is completely uncontrolled, and it is all done by spontaneous association. The attention is diffused and dim, extending over a very wide field, instead of a small and well-illuminated one. —H. Crichton Miller, *Medical Press and Circular*.

THE EFFECT OF GRAVITATION ON THE PRESENTATION AND POSITION OF THE FETUS

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The presentation of the head of the fetus at the uterine outlet, at the time of birth, is so common and offers so comparatively easy a delivery, that since the earliest times it has been called the normal presentation. The statistics collected by Schroeder,[1] including several hundred thousand cases, give 95 per cent. of vertex presentations, and Pinard[2] gives about the same figures. These findings are for all periods of pregnancy; but if full term cases alone are considered, about 97 per cent. present the occiput. About 70 per cent. of the vertex presentations occur in the left, and 30 per cent. in the right position. Naegele[3] first pointed out that the vertex is usually directed anteriorly in left and posteriorly in right positions, so that the presenting part is usually found at one or the other extremity of the right oblique diameter of the pelvis.

The great frequency of cephalic presentations at the end of pregnancy was recognized by Hippocrates, but he believed that the child presented by the breech up to the seventh month, and then turned over and presented the head. This turning over at the end of the seventh month has been known as "The fetal somerset" of Hippocrates. But the more frequent examination of pregnant women has demonstrated the error of this idea, so that since the time of Smellie[4] and Baudelocque,[5] it has been generally believed that head presentations predominate throughout pregnancy. For many years it was considered that the presentation once determined was permanent, but in 1861 Hecker[6] and others demonstrated that it is not unusual for changes in presentation to occur even in the latter months of pregnancy. It has also been shown that these changes are usually from some other to the cephalic presentation, and that the presentation becomes more stable the nearer full term is approached.

Many theories have been advanced to account for the prevalence of head presentations, and spirited controversies have occurred between their advocates. These theories fall into three groups, namely, the gravitation theory, the theory of mutual accommodation between the fetus and the uterine cavity, and a group of theories which have been put forward in the belief that the fetus determines its presentation by its own active movements. The first two are the leading theories at present.

The gravitation theory, first mentioned by Aristotle,[7] attributes the dependent position of the head to the greater weight of that part. Perhaps the most notable advocate of this theory has been James Matthews Duncan,[8] although Veit,[9] Smellie,[4] William Hunter,[10] and others have also supported this view. Duncan showed that if a recently dead full term fetus, that had not breathed, be bound with threads so as to be retained in the intra-uterine habitus, and put into salt solution of about its own specific gravity, it floats obliquely with the head down and the right side lower than the left. He also separated the head from the body and found that it had a specific gravity of about 1.060, while the body had a specific gravity of about 1.050, thus clearly demonstrating the greater specific gravity of the cephalic part of the fetus, while the lower position taken by the right side of the fetus showed that the center of gravity of the whole fetus lay to the right of the midline. Veit[9] and numerous others have duplicated these observations.

Duncan[8] also clearly described the manner in which the gravid uterus is supported. In the erect subject it lies forward on the anterior abdominal wall and is inclined at an angle of about 30 degrees to the horizon, and when the woman is in dorsal decubitus it is not horizontal, but lying back on the posterior abdominal wall and brim of the pelvis it forms an even greater angle with the horizon. Thus the os is the lowest part of the uterus in all ordinary positions of the woman except the lateral recumbent.

Objections to the gravitation theory have been made by a number of able writers, among them Dubois,[11] Scanzoni,[12] and Sir James Simpson.[13] Simpson did some careful experiments with fresh fetuses, putting the fetus into a large vessel filled with water and allowing it to sink to the bottom. In such an experiment, he said, if gravitation is competent to account for cephalic presentations, it ought to cause the head of the fetus to fall first to the bottom of the vessel. He found, however, that, on the contrary, the fetus always turned on its back, and the region of the scapula first touched bottom. He therefore declared that the action of gravity would not tend to produce a cephalic presentation, but that the preponderance of that presentation was due to the accommodation of the fetal ovoid to the cavity of the uterus.

The findings of Duncan, taken together with a consideration of the general character of the anterior and posterior surfaces of the fetal ovoid, rather readily suggest the prediction of the results obtained in Simpson's experiment. For when the fetus is in the intrauterine habitus, the posterior surface of the fetal ovoid, formed by the back of the trunk and the back of the anteflexed head, is a fairly regular convex surface, and such a surface offers a relatively small resistance when making its way through a body of water. On the contrary, the anterior surface of the fetal ovoid presents the anteflexed head and the four extremities so folded on the body as to form an irregular rather concave surface, such as in passing through water offers appreciable resistance. This difference in the resistance offered by the anterior and posterior surfaces of the fetus would tend to cause such a rotation as was noted in the experiment. The location of the center of gravity to the right of the midline and nearer the back than the front of the fetus, as asserted by Duncan, would also tend to produce the same rotation. The greater density of the head should cause it to fal a little faster than the other parts of the fetus, were it not for its attachment to the rest of the body. Thus the cephalic end of the fetus should slightly anticipate the other end in its arrival at the bottom of the vessel, and the fetus should move through the water back foremost, both of which it evidently did.

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[1] Schroeder, Oldhausen and Veit: Lehrbuch der Geburtshülfe, 1899, Ed. 13, p. 143.

[2] Pinard: L'accommodation foetale, Traité du palper abdominal, Paris, 1878, Ed. 2, 1889.

[3] Naegele: Die Lehre vom Mechanismus der Geburt, Mainz, 1838, p. 10.

[4] Smellie: A Treatise on the Theory and Practice of Midwifery, Edited with Annotations by Alfred H. McClinlock, London, 1876, i, 179-184.

[5] Baudelocque: L'art des accouchements, Paris, 1789, Ed. 2.

[6] Hecker: Klinik der Geburtshülfe, Leipzig, 1861.

[7] Aristotle: De Generatione animalium, Book 14, Chapter IX, in Harles: Neurologiae primordia, Paragraphs 5-16.

[8] Duncan, James Matthews: Researches in Obstetrics, Edinburgh, 1868.

[9] Veit, G.: Die Langenverhältnisse bei Früh- und Zwillingsgeburten, Scanzoni's Beitr., 1860, iv, 279.

[10] Hunter, William: The Gravid Uterus, Rigby's Edition. Duncan, Researches in Obstetrics.

[11] Dubois, M.: Mémoire sur la cause des présentations de la tête, Mém. de l'Acad. Roy. de Méd., 1833, ii.

[12] Scanzoni: British Med. Jour., March 17, 1866.

[13] Simpson, Sir James: Edinburgh Month. Jour. Med. Sc., January, 1849; Obstetric Mem. and Contributions, Phil., 1856, ii, 88.

Probably the ablest opponent of the gravitation theory is Schatz.[14] In 1900 he made criticisms of Duncan's work which do not seem to have been met. Schatz stated that by following Duncan's method of procedure.

> "The interesting observation was made, that fetuses of the first months of pregnancy swim with the head up and the rump end down. But the difference between the ends becomes less as pregnancy proceeds, and that at the sixth or seventh months of pregnancy the fetus swims horizontally, later toward the end of pregnancy with the head lower than the rump, and at the end of pregnancy the fetus swims with the long axis perpendicular." He remarks that: "These experiments remind one of 'the fetal somerset' of Hippocrates," which was the turning of the child from a buttocks to a cephalic presentation supposed to occur at about the seventh month; "also the experiments seem to give a very pretty explanation of the more recent observations, that toward the end of pregnancy the presentation becomes more constant and established. And yet," he went on to say, "The whole theory and its application are false; because in a body whose parts are of various densities, there is no fixed point on which the body will balance when immersed in solutions of different specific gravities."

He illustrates this point as follows:

> "If one take a body, for example a cube of one cubic centimeter volume with a specific gravity of 3, together with another cube of the same size but of a specific gravity of 4, and join them together to form a rectangular body, the heavy-point of the system of seven grams is at a point three sevenths of the distance from the center of the four gram cube toward the center of the three gram cube, when the body is in the air. If now the body should be put into water, each cube would displace one cubic centimeter of water, which weighs a gram, then the heavier cube would weigh three grams and the other two grams, and the heavy-point would be two-fifths of the distance from the center of the heavier cube toward the center of the lighter cube. If, again, the body should be placed in a solution of a specific gravity of 2, then each cube would displace two grams of the solution and the heavier cube would weigh two grams and the lighter cube one gram, and the heavy-point would be one-third of the distance from the center of the heavier cube toward the center of the lighter cube. Thus the greater the specific gravity of the solution in which the body is suspended, the nearer the heavy-point approaches the center of the heavier cube," or differently stated, the position of the heavy-point of such a body is dependent on the specific gravity of the solution in which it lies.

In the experiment of suspending the fetus in a solution of its own specific gravity, about 1.050, natural conditions are not reproduced, for the liquor amnii has a specific gravity of only 1.006 to 1.008, and the heavy-point of the fetus lying in it is not the same as it is in the heavier solution. To determine the effect of gravity on a fetus suspended in a solution of the specific gravity of the liquor amnii, Schatz proceeded as follows: He took a fresh full-term fetus, which had not breathed, and to each end of its long axis he attached a cord, the other end of which was attached to the pan of a good balance. The fetus was then lowered into the salt solution (specific gravity 1.008), and the length of the cords so adjusted as to bring the long axis of the fetus parallel to the beam of the balance. When these conditions had been established, the pelvic end of the fetus was found to sink to a lower position than the cephalic, and it was found possible to measure the excess weight on the pelvic side of the balance by putting weights in the pan on the other side. In consequence of this finding, Schatz declares that the experiments of Duncan prove nothing with regard to the statics of the fetus in a fluid of the specific gravity of the liquor amnii. The experiment has been verified by Williams[15] by putting the fetus suspended as above into a solution of its own specific gravity, when the head sinks as in Duncan's experiment, and then gradually diluting the solution to a gravity of 1.008. During the dilution the fetus slowly assumes the horizontal position, and then as the dilution progresses, the buttocks sink to the lower position.

The conclusion drawn from these experiments, that so far from being a factor in determining the cephalic presentation, the action of gravity if unopposed would regularly produce a breech presentation, is such a remarkable contradiction of the findings of Duncan, that a study has been made to determine if possible the correctness of the conclusion.

Experiments were conducted as follows: The fetus was bound with small cord so as to be retained in the intra-uterine habitus, and then put into a salt solution, the specific gravity of which was so adjusted that the fetus was freely suspended in it. The experiments of Duncan were thus duplicated, and the specific gravity of the solution was taken as the specific gravity of the fetus. If the solution were diluted, of course the fetus would fall to the bottom. To prevent this, the fetus was suspended by the use of a long balance beam with a cord hanging from each end. These cords were attached to the fetus much as described by Schatz, but instead of the cords being attached to the ends of the long axis of the fetus, they were attached to the ends of that transverse axis on which the fetus balanced, in the air, with the long axis horizontal. With such an arrangement one would expect that, whatever the specific gravity of the solution into which the fetus was lowered, a disproportionately large part of the weight of that part of the fetus having the lower specific gravity would be borne by the solution, and that in consequence the opposite end of the fetus would sink. Such was found to be the case. The observations were as follows:

Experiment 1.—A 5-months fetus was freely suspended in a solution of a specific gravity of 1.049. Neither end tended to sink to a lower position than the other.

Experiment 2.—A premature child, which had breathed, was freely suspended in a solution of the specific gravity of 1.046. Neither end tended to a lower position than the other, but the right side took a lower position than the left whatever the initial position in which it was placed.

Experiment 3.—A fresh full-term fetus, weight 2,530 gm., specific gravity 1.050, in salt solution took an oblique position with the head down, but neither side took a lower position than the other.

Experiment 4.—Of a 5-months fetus, specific gravity 1.044, neither end tended to take a lower position than the other, but the body without the head took a vertical position with the head end downward. The specific gravity of the head was 1.041.

Experiment 5.—In a 6-months fetus, of specific gravity 1.037, the specific gravity of the head was 1.041, that of the liver and limbs 1.047. Neither end of the fetus tended to take a lower position than the other, but the decapitated body was very decidedly inclined to lie on the right side.

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[14] Schatz: Ueber den Schwerpunkt der Frucht, Zentralbl. f. Gynäk., 1900, p. 1033.

[15] Williams, J. W.: Obstetrics, 1909, Ed. 2, Chapter IX.

Experiment 6.—In a male child, length 50 cm., the weight of the fetus was 2,485 gm., specific gravity 1.054; weight of the head 795 gm., specific gravity 1.056; weight of the body 1,690 gm., specific gravity 1.053. In salt solution the head end of the fetus went down and the right side was lower than the left. The fetus then was balanced as described above and when lowered into water it took a position like that which it took in the salt solution of its own density.

Experiment 7.—In a male child, length 50.5 cm., the weight of the fetus was 2,600 gm., specific gravity 1.051; weight of the head 810 gm., specific gravity 1.054; weight of the body 1,790 gm., specific gravity 1.050. It took a position in salt solution of its own density with the head nearly vertically downward and the right side lower than the left.

Experiment 8.—A male child, length 49 cm., weight 2,830 gm., was freely suspended in a solution of a specific gravity of 1.051 in which it took a position with the head nearly vertically downward and the right side lower than the left. It was then balanced as described before, and it then took a similar position when lowered into water.

The length of the long axis of the fetus, while in the intra-uterine habitus, was found to be 29 cm., and the transverse axis, on which the fetus balanced in the air, was found to be 15.5 cm. from the cephalic pole.

Experiment 9.—A full-term child 3 days old, weight 2,005 gm., floated in water with the head directly downward. The length of the long axis, when the body was bound in intra-uterine habitus, was 27 cm., and the transverse axis on which it balanced in the air was 14.5 cm. from the cephalic pole.

These observations almost exactly duplicate those reported by Duncan,[8] and when we review the findings we should bear in mind Duncan's warning that most of the early fetuses have been dead for some time before birth, and that in consequence decomposition is likely to have altered the relative densities of the parts, so that we may easily discount the variations in the findings made in examining the premature subjects.

If now we examine the data from the foregoing experiments together with the observations made by Duncan,[8] Simpson,[13] Schatz[14] and Williams,[15] the following conclusions will be found consistent with each observer's results:

1. The cephalic part of the fetus has a higher specific gravity than the body.
2. The center of gravity of the fetus, in intra-uterine habitus, is nearer to the buttocks end than to the cephalic end of the long axis.
3. The center of gravity of the fluid displaced by the fetal body is even nearer to the buttocks end than the center of gravity of the body itself.

As indicated, in the illustration given by Schatz, the heavy-point, as he calls it, of a system of two bodies of unequal specific gravity, moves along a line from the center of gravity of the system to the center of gravity of the denser body, as the specific gravity of the solution in which it lies is increased.[4] This is due to the fact that, when two such bodies lie in a solution, a greater proportional part of the weight of the body, of the lower specific gravity, is supported by the fluid, and this disproportion becomes greater, the greater the specific gravity of the fluid. By the method of suspension used by Schatz, the effective support for the weight of the fetus is applied to the midpoint of the long axis, and his experiment shows that the specific gravity of the liquor amnii is not great enough to cause the heavy-point to move from the center of gravity of the fetus to the midpoint of its long axis, for the pelvic end takes the lower position. On the other hand, a solution which will support the fetus causes the heavy-point to move beyond the midpoint toward the cephalic pole, as is shown by the experiment of Williams. And in this movement of the heavy-point with the changing of the density of the solution, we find a complete explanation of the phenomena observed in Williams' experiment.

In my experiment the effective support for the weight of the fetus was applied to its center of gravity. The support was thus applied to the heavy-point, and immersion of the fetus in any fluid, not dense enough to float it, would cause the heavy-point to move from the point of support toward the heaviest part of the body, the head, with a resulting depression of that part, as was observed.

In view of these conditions, shall we say that the effects of the action of gravity is rather to produce a breech presentation than a cephalic? In both experiments with the lighter solutions, mechanical supports were used, and the results obtained were determined by the point of application of the support.

It is pertinent to recall that the center of gravity of the fetus was found to be nearer the pelvic end[14] and about 1 cm. from the midpoint of the long axis, so that if the point of support be moved even 1 cm. from the midpoint toward the larger end of the fetal ovoid, the action of the amniotic fluid, due to gravity, would cause the head to sink to the lower position. But would we not make a rather unreasonable supposition in supposing that the fetus during its intra-uterine existence has a mechanical support acting on any single point?

It may be helpful at this point to inquire just how great the effective weight of the fetus is when lying in the amniotic fluid, and how that weight is distributed. The specific gravity of the fetus may be taken as 1.050, and that of the liquor amnii as 1.008. Then 1.050 : 1.008 :: 100 : x, in which x equals the percentage of the weight of the fetus supported by the liquor amnii. $x = 96$ per cent. That is, only 4 per cent. of the weight of the fetus is unsupported by the fluid. In other words, in a 3-kg. fetus, the pressure exerted on the wall of the uterus by the fetus equals 4 per cent. of 3,000 gm., or 120 gm., equal to about 4 ounces. If in this fetus the head is found to have a specific gravity of 1.056, while that of the rest of the body is 1.048, then each cubic centimeter of the substance of the head will have, on an average, an unsupported weight equal to 1.056 gm. minus 1.008 gm., or 0.048 gm., and the body similarly will have an unsupported weight per cubic centimeter equal to 1.048 gm. minus 1.008 gm., or 0.040 gm. Thus the effective weight of the head is one-fifth greater per volume than that of the body. As a result of this condition of affairs, it seems reasonable to expect that the head will fall to a lower position more rapidly than the buttocks part of the fetus, whenever any movement of the mother or fetus causes a separation, however small, between the fetal ovoid and the inclined slippery surface on which it lies. The fact, that in a fluid the denser of a group of bodies falls to the bottom of the container when the vessel is shaken, has been taken advantage of from prehistoric times in the panning of gold. The particles of gold collect on the bottom of the pan under the gravel even though the gravel stones are larger and heavier than the individual particles of gold. The denser body exerts a greater force per unit area on the fluid under it, particularly if the fall be short, and therefore more rapidly makes its way to the bottom. Other factors also come into play in the panning of gold, but when bodies of approximately the same size and shape are considered, the relative densities of the bodies is the major factor.

The supposition that, when the fetus falls through fluid, the head will fall the faster and gain the lower position, would seem to call for the very condition which Simpson[13] failed to find in his experiments. For he found that when the fetus falls through water, the head does not fall the faster and first reach the bottom, but that on the contrary the region of the scapula does it. But it should be remembered that, as a body gains velocity in moving through fluid, the shape of the body becomes a major factor in determining the order of precedence of its parts. However, in the first instant of its fall, the velocity is so small that the shape of the body exercises very much less effect. In consequence, repeated short falls may produce an effect on the relative positions of the parts of a body rather different from that produced in the same body by a single fall of the same total magnitude. Thus we seem to be warranted in expecting that the effect of gravity on the denser head of the fetus would be like that on the gold in the pan, and that it would cause the head to take the lower position unless mechanically hindered.

The note has been made by Schatz[14] that the relative specific gravity of the poles of the fetus changes with the advance of pregnancy, the relative specific gravity of the two poles in early pregnancy being the reverse of that found in the mature fetus. It must be borne in mind that most of the early fetuses available are open to the criticism, made by Duncan,[8] that they have been dead for some time before delivery, and that degenerative processes have changed the relative densities of their parts. In this connection, we should consider the practical unanimity of opinion among those who have opened the pregnant uterus post mortem, that the cephalic is the common presentation at all periods of pregnancy. Among these observers is Hohl,[16] who said:

> We have examined a series of unopened ova, and have always observed that the embryo reposing in the liquor amnii lies with the head lowest. We have in a considerable number of autopsies of pregnant women, not advanced to the seventh month, never once seen the breech lying lowest, if the corpse had not been disturbed.

Vesalius, Paré, Smellie,[4] Hunter,[10] Baudelocque[5] and Velpeau[17] are observers reporting similar findings. More recently Edgar[18] has stated that "it is well established that the head is generally lower than the breech, even from the very first formation of the liquor amnii."

During the earliest months of pregnancy, the relatively small fetus is enclosed with a considerable amount of fluid in a globular sac. As the fetus is heavier than the fluid, it lies on the lower wall of the sac, as soon as the umbilical cord has become long enough to allow it. As long as the uterus has the globular form, the fetus can hardly be said to have a presentation, for it slides readily over the lower wall of the amniotic cavity with the changes in position made by the mother, and the arciform contour of the body of the fetus determines its adaptation to the curved surface on which it lies. As pregnancy advances, the cavity of the uterus becomes somewhat elongated, but the body of the fetus, for some time still, fills the cavity so incompletely as hardly to allow the participation of any agent other than gravity in determining its position in the cavity. But as the fetus comes to fill the uterus more completely, the walls of the uterus restrict its movements, and become a potent factor in preserving a longitudinal presentation.

That the action of gravity is a factor in determining the anterior or posterior position of the occiput, in cephalic presentations, has been fully demonstrated by Schatz.[19] In 1904 he reported a very long series of observations made on women in the later months of pregnancy. He found that the left occipito-anterior position is more common in the evening after the mother has been up and around than in the morning at the time of arising, while the right occipitoposterior position is more frequent in the morning than in the evening. This phenomenon he attributes to the weight of the liver lying on the right side of the fetus, which, tending to the lower position, comes forward during the hours when the woman is erect and tends to go backward when she lies down. These changes in position most readily occur in multiparas, because in them engagement does not occur until the beginning of labor. The predominance of the left occipito-anterior position over the right occipitoposterior is readily accounted for by the relatively greater activity of the mother in the erect posture, compared with her inactivity when lying down, so that the frequent jarring while the mother is up and about causes a more ready change in the position of the fetus.

Thus Schatz satisfied himself that gravity is an active factor in determining the usual positions found in cephalic presentations. Yet, because of a mistaken interpretation of the results of his experiment, which results were primarily determined by the point of suspension of the fetus, he concluded that the cephalic presentation itself not only was not attributable to the action of gravity, but that the tendency of the action of gravity to produce a breech presentation must be counteracted by some other force. But his objections fall to the ground unless we suppose that the fetus, in the uterus, has a *mechanical* support acting on it, the resultant of which is applied at some point nearer the head than the center of gravity. Such a support does not exist. And in view of the slight rocking of the fetus in the uterus, by its own and the mother's movements, it seems reasonable to believe that the denser cephalic pole of the fetus, like the gold in the pan, will find the lowest part of the container. Thus we confirm Duncan's conclusions.

In the study of the effect of the action of gravity on the presentation, it has seemed pertinent to inquire whether any light might be thrown on the problem by a study of the conditions prevailing during pregnancy in the lower animals. The processes of human physiology are the outcome of a gradual evolution, and we find in the lower animals examples of some of the stages of that evolution, so that it would be rather remarkable to credit gravity with being an agent in

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[16] Hohl: Lehrbuch der Geburtshülfe, pp. 160-161. Duncan, Researches in Obstetrics.

[17] Velpeau: An Elementary Treatise on Midwifery, Translated by Charles D. Meigs, Philadelphia, 1831, first American edition, p. 207; Philadelphia, 1838, second American Edition, p. 208.

[18] Edgar, J. C.: Textbook of Obstetrics, Philadelphia, Ed. 2, 1904, p. 473.

[19] Schatz: Die Ursachen der Kindeslagen, Arch. f. Gynäk., 1904, lxvi, 541.

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bringing the heavier head of the fetus to the lower position occupied by the os uteri in the human subject, if in the four-footed animal, in which the os uteri is at the upper end of the uterine cavity, the action of gravity could not be found to assist in producing the habitual cephalic presentation, or at least did not have to be overcome in its production.

In the mare and the cow, the uterus resembles the human in type,[20] and cephalic presentations are the rule. The cornua of the uterus and the broad ligaments are attached to the dorsal wall of the abdominal cavity, and the uterus is in the upper part of the cavity when in the non-gravid state, but after the first of pregnancy the uterus is borne down by the weight of its contents so that it lies on the lower abdominal wall, and the cervix becomes its highest part.

The young of these animals come into the world with a much more advanced development of their limbs than does the human infant, and from the first they are able to run about. Again, the young animal has a head which is smaller in proportion to its body than is that of the human infant, so that we are in a measure prepared for the remarkable findings made by Ernst Bumm[21] in experiments with the fetuses of animals. He made experiments with fetuses of uniparous animals, after the manner followed by Duncan, and he found that when freely suspended in salt solution such fetuses take a position with the pelvic end lower than the head. This reversal of the relative specific gravities of the poles of the fetus, as compared to the condition found in the human fetus, coupled with a corresponding reversal of the positions of the os uteri, is remarkably consistent with the idea that the action of gravity plays a part in the production of the cephalic presentation both in human beings and in animals.

It may also be shown that the action of gravity tends to produce the normal position of the animal fetus. At birth the fetus normally presents with its convex back fitting into the curve of the mother's sacrum, that is, it has its back uppermost and its belly below.

A number of experiments were done with pig fetuses in various stages of development, and every one took a position with the belly side down, when placed in a salt solution of its own specific gravity.

CONCLUSIONS

I think it has been shown that the action of gravity contributes to the production of the cephalic presentation, and that the interpretation of Schatz' experiments was an error because of the manner in which the support was applied in those experiments. In support of the proposition that the action of gravity participates in the determination of the cephalic presentation, three main considerations have been brought forward:

1. The amount and distribution of the effective part of the weight of the fetus lying in the amniotic fluid.
2. The admitted contribution of the action of gravity to the production of the left occipito-anterior position, which is one of the most characteristic features of the cephalic presentation.
3. The very great probability that the action of gravity contributes to the production of the normal cephalic presentation and the normal position of the fetus in animals.

The subject matter of this paper was submitted as a graduation thesis at the Yale Medical School in June, 1911. I wish here to acknowledge my indebtedness to the late Dr. Otto G. Ramsay, professor of obstetrics and gynecology, under whose guidance this work was done.

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THE NURSING INFANT

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The purpose of this paper is to offer some practical suggestions for the prevention and correction of those far too frequent nutritional disturbances of breast babies due to faulty feeding.

During the first few months of infancy, there is probably more milk than at any other time during the nursing period, and the digestive system of the infant is less developed. If then, at 1 month there is as much milk as at 6, and a 6-months-old baby gets enough for proper nourishment, it is quite evident that the infant under 3 months is apt to overeat.

The infant stomach at 2 weeks holds about ounces, at 6 weeks 2¼ ounces, at 8 weeks 3⅓ ounc By nursing every two hours, ten feedings in twen four, granting the baby will not take more than t normal stomach capacity (but he takes much mo for almost all infants eat till the stomach overflow at 4 weeks old he receives 20 ounces in twenty-fo hours.

The mother's weight, let us say, is sixteen times th of the baby. Then in the same proportion the moth would be taking 10 quarts of milk daily. I hav weighed infants of between 2 and 4 weeks, before an after feeding, and in three minutes have found th stomach containing more milk than there should b after from fifteen to twenty minute nursings. Th infant stomach is not emptied under two hours. Breas milk contains a much larger percentage of fermentative bacteria than cow's milk. Continually dilating a naturally delicate stomach, and mixing fresh food with fermenting residue, are almost certain to give rise to flatulent dyspepsia with all its accompanying distress. At 6 or 7 p. m. this discomfort is greatest, because of the day's accumulations.

This dyspepsia, which might be so easily prevented, manifests itself in either gastric or intestinal indigestion, or both, vomiting of sour or curdled milk, diarrhea or constipation, colic and loss of weight, and in many cases chronic indigestion which takes months of careful feeding to repair. The infant, a victim of physician, nurse, mother, grandmother or neighbor, "who has raised lots of babies," frets and whines most of the time. The mother, whose whole life is absorbed in the baby, is soon reduced to a nervous wreck, both physically and mentally, from worry, confinement and loss of sleep. This nervous condition imparts to the milk a disturbing element that no medicine can correct. And so the "vicious circle" is complete.

When the physician realizes this mutual disturbance, he must take a most positive stand and insist that the written instructions for mother and baby be rigidly carried out. The mother now becomes the patient. She must above all things have an abundance of sleep (if necessary, in a room apart from the baby), good nourishing food, rest and much exercise in the open air. A tonic must be given if necessary. Constipation must be corrected with cascara or some mild laxative. Her surroundings must be pleasant and there must be diversion and entertainment. I have often heard mothers say, "I have not been out of the house since the baby was born." In such cases, it is a good plan to give a 3 p. m. bottle, regardless of the age of the child. By so doing the mother may go out for some recreation without hurrying and worrying to be home at three. The milk will be much more abundant and of much better quality.

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[20] Williams, W. L.: Veterinary Obstetrics, 1909.

[21] Bumm, Ernst: Grundriss zum Studium der Geburtshülfe, 1902.

A mother worrying all day and staying awake all night cannot expect to secrete milk that will be a healthy food for her infant. It has been proved experimentally that a child, doing well on cow's milk, can be made sick when fed milk from the same cow after she has been fretted into a state of nervous exhaustion. Some babies may thrive on the stuffing plan, but it will be found that usually when a baby gains more than 8 ounces a week he does it at the expense of his digestion, and there is going to follow a period of indigestion with loss of weight. You will hear mothers say, "My baby is such a nervous baby." These babies for the most part have no constitutional nervous disease, but are simply nervous systems, impoverished with injudicious feeding, just as any other part of the body suffering with lack of nourishment. Improper feeding is not, of course, the sole source of trouble in infants. There are cases of constitutional diseases, or imperfectly developed digestive systems, that must be treated with appropriate drugs, combined with rational feeding.

When the father and mother are healthy, the mother leads a well ordered life, and the baby is normal at birth, by feeding every three hours from the beginning, at 6 and 9 a. m., at noon, and at 3, 6, and 9 or 10 p. m., depending on the mother's bed time, and once between 1 and 3 a. m., the baby will sleep and be happy and contented and gain systematically from 4 to 6 ounces a week, with satisfactory growth and development. This schedule does very well up to weaning time, provided the night feeding is discontinued after the third or fourth month. The mother will say that if she does not give the night feeding, the baby will cry. He certainly will cry, and cry hard too. But he can be trained to sleep from 9 p. m. to 6 a. m., provided the mother will not go to him when he cries. The nursings should be regular and the baby awakened on the minute and allowed to nurse until he falls asleep, or is satisfied. There are some dyspeptic babies who may do better on a four-hour schedule temporarily, and some premature or very weak infants on small feedings every two hours. The milk equilibrium is not usually established until about the sixth week, so one should not be discouraged too soon. Regular, strong nursings by a healthy infant can overcome many difficulties.

In the composition of the milk, aside from the nervous element, the fat and proteins are the only constituents apt to be at fault, and of these the fat content is usually the most variable and troublesome. Within the past year, I have found two cases in which the fat was about 1 per cent. In one of these, the baby cried almost constantly, and in the other the infant showed marked rickets. Three others showed 5, 7 and 8 per cent., respectively. In the latter cases the infants cried a great deal, and did not gain satisfactorily. The milk in every case was as far as possible the middle specimen. Cow's milk, cereals, red meat, exercise and fresh air, and plenty of sleep will almost always raise a deficient fat content, if it is not lower than 2 per cent. If a baby has colic after each feeding, is uncomfortable and sleepless, has facial eczema, or seborrhea of the scalp, vomits sour excoriorating mucus, has stools that smell sour and scald the skin and contain small easily mashed white particles intermingled with light green mucus, or has constipation with musty gray stools, the fat, assuredly, is too high. To reduce this fat excess is more difficult than to raise a deficient percentage. Fresh air and exercise, with a diet consisting of meat once daily, fruits, vegetables and liquid food but no alcoholic beverages, will accomplish much if the nursings are not too frequent.

Often the protein is the disturbing element, causing colic, constipation, or diarrhea with mucous stools containing tough, white curds in shape of bean- or peanut-like masses. Such a condition is usually found with mothers leading a sedentary life and eating much meat, eggs and highly seasoned food with a lack of fruit and vegetables.

In the foregoing are found the causes and, in a large measure, the prevention of colic, certainly one of the most distressing and annoying symptoms a physician is called on to treat. An attack of colic is unmistakable. The child cries violently, the abdomen is hard and distended, the knees are drawn up, and the hands and feet, which are never still, are cold from the intense intestinal congestion. The trouble may be either in the stomach, coming on soon after nursing, or in the intestines an hour or two later. Remembrance of this may help in relieving the infant. For the treatment of colic I have but little to suggest other than what I have already said about the mother's life and the nursing habits, for here certainly prophylaxis is better than treatment. Every mother knows all the mechanical remedies, such as hot applications, enemas, turning the baby over on his stomach, or holding him against her shoulder. It is often necessary to stop feeding entirely for twenty-four hours. Frequently, diluting the milk by giving water, lime-water, or barley-water, before nursing, helps. Nursing a few minutes and stopping a short while, or the use of the nipple shield may be beneficial. I have had some good results with peptonizing powder dissolved in warm water and given before each feeding. Carminatives, milk of magnesia, sodium bicarbonate, magnesium carbonate and bismuth subnitrate may often be used to advantage. In chronic cases, pulverized rhubarb or tincture of nux vomica sometimes gives relief. Sugar should never be used in the prescription for colic. Glycerin is a good substitute. In many cases the elimination of tomatoes, sour fruits and early vegetables from the mother's diet will prevent it. Where the condition has been long standing, improvement should not be expected to take place at once, for time must be allowed, both for the repair of the damage to the digestive tract, and more especially to the nervous system.

One of the commonest difficulties with which we have to contend is the quantity of milk. The indications of insufficient quantity are very definite. The breasts are flabby. When the baby nurses he never seems satisfied. Instead of nursing fifteen or twenty minutes and falling asleep, some fret and whine and pull at the nipple often for half an hour, while others give up entirely for a few minutes and then try again. The weight remains stationary or shows only a slight gain. There is no colic, no vomiting; the stools are scant, often with an olive-green tinge, and contain no bringing the heavier head of the fetus to the lower position occupied by the os uteri in the human subject, if in the four-footed animal, in which the os uteri is at the upper end of the uterine cavity, the action of gravity could not be found to assist in producing the habitual cephalic presentation, or at least did not have to be overcome in its production.

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3. The very great probability that the action of gravity contributes to the production of the normal cephalic presentation and the normal position of the fetus in animals.

The subject matter of this paper was submitted as a graduation thesis at the Yale Medical School in June, 1911. I wish here to acknowledge my indebtedness to the late Dr. Otto G. Ramsay, professor of obstetrics and gynecology, under whose guidance this work was done.

8 Pleasant Street.

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[20] Williams, W. L.: Veterinary Obstetrics, 1909.

[21] Bumm, Ernst: Grundriss zum Studium der Geburtshülfe, 1902.

THE NURSING INFANT

BRANCH CRAIGE, M.D.
EL PASO, TEXAS

The purpose of this paper is to offer some practical suggestions for the prevention and correction of those far too frequent nutritional disturbances of breast babies due to faulty feeding.

During the first few months of infancy, there is probably more milk than at any other time during the nursing period, and the digestive system of the infant is less developed. If then, at 1 month there is as much milk as at 6, and a 6-months-old baby gets enough for proper nourishment, it is quite evident that the infant under 3 months is apt to overeat.

The infant stomach at 2 weeks holds about 1½ ounces, at 6 weeks 2¼ ounces, at 8 weeks 3⅓ ounces. By nursing every two hours, ten feedings in twenty-four, granting the baby will not take more than the normal stomach capacity (but he takes much more, for almost all infants eat till the stomach overflows), at 4 weeks old he receives 20 ounces in twenty-four hours.

The mother's weight, let us say, is sixteen times that of the baby. Then in the same proportion the mother would be taking 10 quarts of milk daily. I have weighed infants of between 2 and 4 weeks, before and after feeding, and in three minutes have found the stomach containing more milk than there should be after from fifteen to twenty minute nursings. The infant stomach is not emptied under two hours. Breast milk contains a much larger percentage of fermentative bacteria than cow's milk. Continually dilating a naturally delicate stomach, and mixing fresh food with fermenting residue, are almost certain to give rise to flatulent dyspepsia with all its accompanying distress. At 6 or 7 p. m. this discomfort is greatest, because of the day's accumulations.

This dyspepsia, which might be so easily prevented, manifests itself in either gastric or intestinal indigestion, or both, vomiting of sour or curdled milk, diarrhea or constipation, colic and loss of weight, and in many cases chronic indigestion which takes months of careful feeding to repair. The infant, a victim of physician, nurse, mother, grandmother or neighbor, "who has raised lots of babies," frets and whines most of the time. The mother, whose whole life is absorbed in the baby, is soon reduced to a nervous wreck, both physically and mentally, from worry, confinement and loss of sleep. This nervous condition imparts to the milk a disturbing element that no medicine can correct. And so the "vicious circle" is complete.

When the physician realizes this mutual disturbance, he must take a most positive stand and insist that the written instructions for mother and baby be rigidly carried out. The mother now becomes the patient. She must above all things have an abundance of sleep (if necessary, in a room apart from the baby), good nourishing food, rest and much exercise in the open air. A tonic must be given if necessary. Her constipation must be corrected with cascara or some mild laxative.

QUININ SOLUTION FOR BLADDER IRRIGATION

ELLICE McDONALD, M.D.
NEW YORK

In the course of fifteen years' experimentation in the treatment of cystitis in women, solutions of a great number of substances have been tried in the hope of discovering the ideal one. All the various silver salts have been tested. Two varieties of silver salts which have been made in my laboratory have been given a trial. Various oily substances, and combinations of germicides with oil, have also been investigated.

The requisite of an irrigating solution in cystitis in women is that it should be non-irritating, easily obtained, antiseptic, stimulating and healing to the inflamed surfaces.

Of all the substances used, quinin bisulphate best fulfils these requirements. It is easily soluble in water, is comparatively non-irritating and is distinctly antiseptic, much more so than the various irrigating solutions now used. It has been employed by me in cystitis in women for eight years. I first drew attention[1] to its use in 1908.

Quinin bisulphate has a phenol (carbolic acid) coefficient of 0.5, or is one-half as germicidal as pure phenol, and will inhibit the growth of fresh typhoid culture in the strength of 1:30,000. It may be used in irrigating in a strength of 1:2,000 without noticeable irritation.

It should be remembered that the antiseptic or growth-inhibiting action of a substance differs from the germicidal or bacteria-killing properties. The phenol coefficient, or the germicidal strength in terms of phenol, is the measure of the germicidal qualities. The antiseptic or inhibiting power of a substance must be measured by a comparison with other substances. The method which I have used in comparing the inhibiting qualities of substances is to take a measured amount of standard broth culture, 9 c.c., add to it 1 c.c. of twenty-four hour broth culture of typhoid bacilli, and to this then is added a certain proportion of the antiseptic substance to bring it up to the required strength to be tested, as for example, 1:30,000 of quinin bisulphate, which will inhibit. In this way one substance may be tested against another.

Mercuric chlorid will inhibit twenty-four hour typhoid in the strength of 1:50,000.

The more elaborate salts of quinin do not offer any advantage over the simple and easily obtained bisulphate. Chinosol (oxychinolin sulphate) has a phenol coefficient of 0.3, and will inhibit typhoid in the strength of 1:40,000. Thus, quinin bisulphate is a better germicide than chinosol, and differs but slightly from it in antiseptic qualities.

According to my experiments, mercuric chlorid will inhibit bacterial growth in a strength of 1:50,000; chinosol in 1:40,000; quinin bisulphate in 1:30,000.

The quinin bisulphate solution is useful for bladder irrigation and cystoscopic examinations. It is particularly satisfying to have such a strongly antiseptic solution through which to catheterize the ureters and so avoid infection.

174 West Fifty-Eighth Street.

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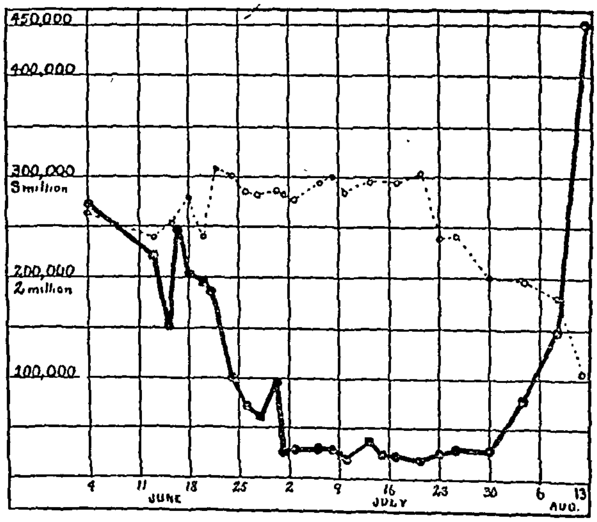
[1] McDonald, Ellice: Med. Rec., New York, Feb. 22, 1908.

A CASE OF SPLENOMYELOGENOUS LEUKEMIA TREATED WITH BENZOL

CLARENCE F. GRAHAM, B.A., M.D., PROVIDENCE, R. I.
House Officer, Rhode Island Hospital

In view of the present interest in the benzol treatment of leukemia, the following clinical report may not come amiss, both because of the immediate benefit from the use of the drug and from the later acute recurrence in the course of the treatment.

History.—The patient, Mrs. M. B., a native of Rhode Island, was admitted to the Rhode Island Hospital, June 3, 1914, complaining of shortness of breath, general weakness and an abdominal tumor. Two years previously she had been under treatment in the same hospital for uterine hemorrhage, cough and general weakness. At this time she had a red cell-count of 3,712,000, a white cell-count of 120,000 and a hemoglobin of 29 per cent., with the characteristic blood-picture of splenomyelogenous leukemia. The spleen was then found enlarged to the umbilicus. After six weeks of Roentgen-ray treatment the red cell-count had become normal, though the white cell-count remained high, and the spleen had receded to the costal margin. The patient's family history was negative. She had suffered from the usual diseases of childhood, and her health had been poor for the last seventeen years. For six months before her admission she had coughed a great deal, though without hemoptysis, and had lost weight. She suffered constantly from gastric disturbance, together with pain in the precordial and left epigastric regions, and had been extremely dyspneic for two months before admission. For two years the patient had been annoyed by swelling of the legs whenever she was about, and for a year previous to her admission she had noticed a gradually increasing mass in the abdomen. Two years ago she had had severe uterine hemorrhage over a period of two months, and had been twice curetted. The onset of the present illness cannot be definitely dated, since it had been only an aggravation of the symptoms already present, with the addition of frequent nosebleeds and a profound nervous depression.



Curves of blood-counts: solid line, white cell-count; broken line, red cell-count.

Physical Examination.—The patient is a poorly developed and greatly emaciated woman of 40, propped up in bed and extremely dyspneic. The expression is anxious and pained, and the general condition seems almost hopeless. The skin is sallow and pale, and the mucous membranes are anemic. The chest is poorly formed, with small expansion. Respiration is rapid and labored, and evidently painful. The percussion note is everywhere resonant; the breath sounds are vesicular, with numerous moist râles over the whole chest. The point of maximum cardiac impulse is in the fifth interspace 7 cm. to the left of the midsternal line. The left border of the heart is 9 cm. to the left, and the right border 4.5 cm. to the right of the midsternal line. There is a loud, blowing systolic murmur at the apex. The pulse is rapid, of low tension and markedly irregular. A firm mass, evidently the enlarged spleen, occupies the whole left side of the abdomen, coming to the right of the midline just above the umbilicus and extending into the pelvis. The hilic notch can be felt at the umbilicus. The splenic tumor is decidedly tender on palpation. Both legs are slightly edematous to the knee; the knee-kicks are normal. There is no general glandular enlargement.

The blood examination on the day after admission showed: Red blood cells 2,610,000 (corrected for the white count); white blood cells 270,000; hemoglobin 60 per cent.

Differential count—Wright's stain—250 cells:

	No.	Per Cent.
Polymorphonuclear neutrophils	55	22
Polymorphonuclear basophils	0	....
Polymorphonuclear eosinophils	3	1.2
Small mononuclears	3	1.2
Large mononuclears	1	0.4
Neutrophilic myelocytes	183	73.2
Basophilic myelocytes	2	0.8
Eosinophilic myelocytes	3	1.2

The predominating white cells were myelocytes, ranging in size from 3.5 to 16.8 microns, with clear rounded or indented nuclei, and a finely granular protoplasm. No nucleated reds were found on this first examination.

Treatment and Results.—The patient had nearly expired as a result of the journey to the hospital, and her grave condition made it impossible to move her to the Roentgen-ray room for treatment. As no portable Roentgen apparatus was available, it was decided to try the benzol treatment. As soon as her condition had been somewhat improved by digitalis and rest, the administration of benzol (benzene, C_6H_6) was begun, and at the same time Fowler's solution was given in the usual way. The benzol, mixed with equal parts of olive oil, was administered in 10-minim capsules after meals, and was well tolerated with only occasional complaint of slight heart-burn. The initial dose corresponded to 15 minims of the benzol daily, and this was later increased to 45 minims daily.

The accompanying curve shows the course of the red and white counts from the time of the patient's admission. Up to the time when the benzol was begun there had been a drop in the white cell-count, possibly because of the arsenic, which was started before the benzol. Shortly after the administration of the benzol was begun, there occurred the usual initial rise in the white cell-count; then following this came a rapid and steady reduction in the leukocytosis. Hand in hand with this reduction came a slight increase in the red cell-count, while the patient's general condition improved greatly. By the end of a month she was sitting up in a chair, no longer dyspneic, and was rapidly recovering her appetite. The spleen was entirely to the left of the midline, with its lower edge at the iliac crest, and had become hard and no longer painful on palpation.

The differential count, July 3, was as follows:

	No.	Per Cent.
Polymorphonuclear neutrophils	84	42
Polymorphonuclear basophils	0	....
Polymorphonuclear eosinophils	0	....
Small mononuclears	2	1
Large mononuclears	20	10
Myelocytes	60	30
Transitionals	25	12.5
Nucleated red cells	4	2
Normoblasts	3	1.5
Unclassified	2	1

It was noted that the nuclei of the myelocytes were becoming more and more granular, and that the distinction between myelocytes and transitionals was increasingly hard to draw. Myelocytes of the type found in the first smear, with clear nuclei, were no longer to be seen. A few polychromatophilic and stippled red cells were found in this preparation, perhaps indications of the toxic effect of the benzol or of the arsenic.

For three weeks this improvement continued, and the patient even asked to be moved into the ward. Then, July 24, her temperature abruptly rose, and on the 27th she complained of pain in the left side. An area of extreme tenderness was discovered on the enlarged spleen, probably corresponding to a fresh infarct. The red cell-count had already fallen a little, and the white cell-count had risen. From this time her failure was rapid. July 30 the red count had fallen to 2,000,000 and the benzol was discontinued. Recourse was had to the Roentgen ray, but the patient developed the signs of an acute leukemia, and within thirteen days of the withdrawal of the benzol died with a white count of 456,000.

I wish to acknowledge the kindness of Dr. Henry A. Cooke in permitting the publication of this case record.

CLOSURE OF PYLORUS. CASE REPORT WITH SUGGESTION AS TO TECHNIC

Richard A. Barr, M.D., Nashville, Tenn.

History.—Miss G., white, aged 28, was admitted Nov. 30, 1914.

Family history unimportant. Patient had typhoid fever seven and one-half years previous to admission. Nothing else of interest in previous personal history.

Patient had stomach trouble ever since the attack of typhoid fever. This began with sour stomach and gas formation. Later she began having colic. The pain was epigastric and usually came on about 4 p. m. She would have these attacks of pain every day for a few days or even a few weeks, and then she would have no more for a varying length of time. At the time of this report she had had no attack for eight months. She had until two weeks prior to admission a burning spot in her back at the angle of the right scapula. This had been present for two years, but disappeared at the time mentioned and a dull ache began in the same place with a tendency to radiate around her chest to the ninth or tenth costal cartilage. She had never vomited and had only had nausea two or three times in the seven years. No jaundice, no constipation. Her attacks were worse in winter. There were times when eating crackers relieved the pain, but no period during which pain always came with an empty stomach. Her mornings were always free of discomfort. There was no period when pain followed the taking of food.

Three years and again two years prior to admission she had an attack diagnosed as peritonitis, which began with epigastric pain, and each attack kept her in bed for some weeks.

Physical Examination.—Physical examination was almost negative, except that the patient was thin. She was not emaciated and her skin was clear.

Blood: Hemoglobin 85 per cent. W. B. C. 11,500. R. B. C. 4,960,000.

Urine normal.

Stomach contents after ordinary test meal showed reduced acidity, but free hydrochloric and free lactic acid.

Diagnosis.—Chronic calculous cholecystitis with probable ulcer of duodenum.

Operation.—Operation disclosed plainly marked chronic appendicitis, indurated ulcer duodenum and apparently normal gall-bladder.

Appendectomy and posterior no-loop gastrojejunostomy were done, and then the pylorus was occluded by a variation of the Biondi method.

The necessity of occluding the pylorus in parapyloric ulcers without stenosis is now well established and the difficulty of accomplishing this occlusion, except by division and closure of the two ends, is equally well known. Timidity often causes us to try some less difficult procedure in hope of securing a good result, but we should only be deterred from making a complete and permanent occlusion by the special features of the individual case. In this case I mobilized the pylorus by ligature and division of the omentum. While I was doing this I decided to try a little technical procedure that I have several times thought of as being applicable in these cases.

I made a vertical incision through the peritoneal and muscular coats of the duodenum between the ulcer and the pyloric vein, so called. This wound I stripped back from the underlying mucous coat, and then dissected loose posteriorly the exposed cylinder of mucous membrane, which was easily cleared for about an inch. The mucous membrane was then doubly ligated near the center, with just space enough between the two ligatures to allow for cutting through with knife or scissors. The mucous membrane was divided between the ligatures and a purse-string of catgut run around the base of each stump in the angle where it joined the other coats of the intestine. This suture was placed rather in the muscular coat than in the mucous membrane itself. The stumps were then umbilicated and the purse-strings tightened and tied, just as is done in disposing of the stump of the appendix. The serous-muscular wound was closed with two rows of sutures, the peritoneal coat being turned in against the muscle of the posterior wall of the duodenum.

While handling the stumps one of the ligatures slipped off. The mucous membrane was seized with forceps and inverted without further effort at ligation. I am rather inclined to think that this would be the preferable routine method, except for possible hemorrhage from the cut edge of the mucous membrane, and this could certainly be controlled by proper care in placing the purse-string sutures.

I am sure that this idea is a good one and simplifies closure of the pylorus very considerably. It can be carried out without dividing the omentum, as there is no necessity for mobilizing the pylorus. It produces such a long gap, free of mucous membrane, that the continuity of the lumen of the bowel is not likely ever to be reestablished.

A longitudinal incision may be used in the serous-muscular coat instead of the vertical incision which I employed, and would have some advantages, but would cause more hemorrhage.

Ligation of the exposed cylinder of mucous membrane at both ends with removal of intervening section, followed by careful closure with inversion of the serous-muscular structures so as to obliterate the space left vacant, could be more easily done, and would probably be satisfactory though not so pleasing technically.

The patient made an uneventful recovery.

POISONING BY MERCURIC CHLORID PRESENTING UNUSUAL FEATURES

Horatio C. Wood, Jr., M.D., Philadelphia

The following case seems worthy of record because of the size of the dose of mercuric chlorid, the delay in onset of symptoms, and the prolonged suppression of urine.

J. M., aged 43, a man of splendid physique, walked into the accident ward of the Medico-Chirurgical Hospital and stated that he had taken mercuric chlorid tablets (presumably 7½ grains each) by mistake. According to his statement about an hour and a half previously he had taken five tablets but had felt no evil effects until an hour later, when he began to have some nausea and had vomited on his way to the hospital. He was at once given milk and eggs, the stomach washed out and apomorphin injected hypodermically. He was then put to bed, milk and eggs continued, and enteroclysis employed. As there did not appear to be any absorption of the water from the colon the enteroclysis was discontinued after a few hours and hypodermoclysis substituted. The treatment consisted in the administration of demulcents, 4 ounces of milk every two hours, 4 ounces of water by mouth every two hours, hypodermoclysis ranging from a pint to a quart in twenty-four hours, dry cupping over the loins, hot packs twice a day, and toward the end stimulants and anodynes as indicated.

On the second day the nausea and vomiting disappeared (I believe it was as much due to the apomorphin which had been given, as to the poison) and did not become manifest again until the seventh day. During these five days the patient made no complaint of pain and did not seem in any way to feel ill. The temperature ranged between 99 and 101 F. from his admission till the eighth day, when it dropped slightly below normal and from then ranged between 97 and 98 until death.

On the sixth day he complained of some pain in swallowing and his stomach rejected some of the water which he drank. On the seventh the pain in swallowing was more marked, the pharynx was found intensely congested and there were one or two small ulcers on the mucous membrane of the mouth. The ulcerations extended in breadth and depth, and on the tenth day a large part of the pharynx was necrotic. On the eleventh day some dulness, with bubbling râles, was noted at the base of the left chest. Despite stimulation the quantity of fluid in the lungs increased and he died of pulmonary edema on the twelfth day.

The most interesting feature in the case, aside from the slowness of the onset, was the almost complete suppression of urine for a period of about a week. The accompanying table shows the daily quantity of urine.

TABLE SHOWING DAILY QUANTITY OF URINE

Day	Quantity, Ounces	Specific Gravity	Amount of Albumin
1	1½	1.020	Large
2	⅛	?	Large
3	none		
4	none		Moderate
5	½	?	
6	⅝	1.012	Small
7	1	1.014	Small
8	4		
9	9	1.014	Small
10	11		
11	14	1.010	Trace

In a period of 120 hours, therefore, he had secreted less than 2 ounces of urine, despite the fact that he was drinking nearly 2 quarts of liquids and receiving daily nearly another quart hypodermically. There was, however, no evidence of any dropsical accumulation either in the extremities or chest. Some was lost through the bowels although the purging was by no means violent. From the sixth day, the quantity of urine increased daily—despite the fact that the amount of fluid ingested was less because of the difficulty in swallowing which developed about this time—until the day before his death, when he passed 16 ounces.

Holland (Peterson and Haines, Toxicology, 1914, ii, 391) says that after the swallowing of corrosive sublimate "The onset is never delayed half an hour," and I have been unable to find any case in the literature in which symptoms have not appeared promptly. Although we have no definite knowledge in this case of the exact time intervening between the taking of the poison and the onset of symptoms, there was no apparent reason to doubt the statement of the patient. The above quoted remark as to the onset of symptoms in mercuric chlorid poisoning is at least open to question.

It is of interest to note, also, the entire absence of any symptoms suggestive of uremia, either headache, high blood-pressure, urinous odor to the breath or disturbed intellection, despite the fact that the kidneys had practically entirely ceased functioning for nearly a week. Dobsenz (New York Med. Jour., July 26, 1913) reports a case of mercuric chlorid poisoning in which only 10 drops of urine were passed in five days, the patient eventually recovering.

Health and Safety in Metallurgical Plants.—In the metallurgy of iron and steel alone there are more than 150,000 men employed; 30,000 to 35,000 persons are injured and a considerable number are killed each year. In all the branches of the mining industry that are conducted above ground there are 1,300,000 employees, and not less than 100,000 are injured and a considerable number killed each year. In addition, the health conditions in many of the metallurgical plants are bad and the health of a larger number of persons is permanently impaired by the injurious conditions to which they are exposed.—Report of Director, Bureau of Mines, 1914.

space 7 cm. to the left of the midsternal line. The left border of the heart is 9 cm. to the left, and the right border 4.5 cm. to the right of the midsternal line. There is a loud, blowing systolic murmur at the apex. The pulse is rapid, of low tension and markedly irregular. A firm mass, evidently the enlarged spleen, occupies the whole left side of the abdomen, coming to the right of the midline just above the umbilicus and extending into the pelvis. The hilic notch can be felt at the umbilicus. The splenic tumor is decidedly tender on palpation. Both legs are slightly edematous to the knee; the knee-kicks are normal. There is no general glandular enlargement.

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ings, and the Cheyne-Stokes respiration disappears with the improvement in the circulation.

Small doses of morphin cause dilatation of the cutaneous vessels through the action on the vasomotor centers, increasing the actions of diaphoretic drugs which may be administered with it. Dilatation of the cutaneous vessels from any cause may cause erythema, and this sometimes follows the use of morphin or opium. While small doses cause this cutaneous dilatation, large doses have the opposite effect, the skin appearing pale because of the constriction of the peripheral vessels and dilatation of the splanchnic, due to vasomotor depression.

Morphin stimulates the centers in the medulla which are concerned with vomiting with varying degrees of intensity. Emesis may result even with moderate doses, or where the narcotic action is delayed after large doses in man. Vomiting cannot be induced during deep narcosis; hence this symptom is commonly absent in the late stages of morphin poisoning, while nausea, at least, is a more common symptom with moderate amounts. This emetic action of morphin is of some importance in connection with its use in strychnin poisoning, in which morphin is sometimes recommended.

The convulsant action of morphin is not usually seen in man because he succumbs to the narcotic action before the effect on the cord can be developed, but children occasionally show hyperexcitability, or even convulsions, after poisonous doses of opium. The convulsant action of codein is more pronounced than is that of morphin relatively to the narcotic effect. Toxic doses of opium probably contain enough narcotin to add materially to the convulsant action of the morphin present.

Therapeutic doses of morphin have little direct action on the heart except that they may depress the accelerator mechanism, permitting the vagus to exercise increased control over the heart-rate; the action is commonly utilized in therapeutics. The slowing which follows morphin is not always necessarily attributable to this direct action, for it may follow the relief of pain and anxiety, and the resulting rest and sleep.

The nauseant action of morphin is accompanied by some increase in the secretion of the bronchial glands, which is probably due in part to the excretion of the drug by them.

The pupils are not acted on by morphin directly, the miosis which is seen in morphin poisoning being due to the central action; it appears to be analogous to the miosis which occurs during sleep. This is worthy of attention because it is sometimes stated that the degree of antagonism between morphin and scopolamin can be estimated by changes in the size of the pupil. The actions are so different that little importance should be attached to the state of the pupils when morphin and scopolamin are used together.

It is very well known that morphin and opium lessen or abolish peristalsis and relieve pain in the gastro-intestinal tract. In this we have an example of the local analgesic action of morphin, but this is an exception to the rule and it is not seen elsewhere. Even here morphin does not relieve all pain by its local action. It abolishes sensory impulses from the mucous surface of the stomach, but not from the serous.

The behavior of the movements of the stomach after morphin depends on the dose and mode of administration, the gastric movements being increased by small doses, and the pylorus caused to contract firmly by somewhat larger ones, administered in such a way that they enter the circulation with a minimum of local action, as with subcutaneous injection, the effect being due to vagus stimulation.

Many investigators have endeavored to explain the direct and indirect influence of morphin on the gastrointestinal tract, but there is still much to be learned on the subject.

Morphin does not interfere directly with the secretion of urine, but in larger doses it causes the sphincter of the bladder to contract, preventing urination; hence it is often necessary to empty the bladder by means of a catheter during morphin poisoning.

Morphin is absorbed readily from the gastro-intestinal tract, and more rapidly after subcutaneous injection. Opium is used in the form of a pill when it is desired to retard absorption in order that the local action in the stomach and intestine may be prolonged, the colloidal matter delaying the absorption of the alkaloid.

Various explanations have been offered for the alleged greater action of opium than of an amount of morphin equal to that which it contains, but there is no satisfactory evidence that opium has any advantages over morphin except those just mentioned, which insure its increased local action.

Morphin is fixed in the liver of some animals in considerable amounts, and a small proportion may pass into the urine, though testimony on this subject is conflicting; the kidneys are probably negligible as excretory organs when one is seeking to hasten elimination during morphin poisoning.

It is of the first importance that morphin is excreted into the stomach after it has entered the circulation, but it is probable that this excretion is not very active after the first hour following the absorption of the drug into the circulation. It is sometimes stated that the excretion into this organ goes on for many hours, but it is probable that in such cases absorption has been prolonged.

It is surprising that we know so little about the rate of elimination of morphin by previously healthy man in view of its obvious importance in medicolegal cases. Since cumulation does not occur when morphin is taken several times daily by habitués, we must suppose that they, at least, are capable of destroying or excreting the drug fairly rapidly.

Morphin is not dangerous to the infant in the uterus, since it does not breathe through its lungs, but it is dangerous to administer it to the mother at such a time that it will be in the fetal circulation at the time of birth, as it depresses the respiratory center and may cause death. It is excreted in the milk of the nursing mother, and may give rise to poisoning of the infant in that way.

The odoriferous principle of opium is excreted in the urine and may afford a clue in cases of suspected poisoning.

TOXICOLOGY

Few drugs have assumed greater toxicologic importance than opium and morphin, as the various tables of death by poisoning attest.

Habitués become careless and in many instances have taken overdoses with fatal effect. Morphin has been dispensed by error for quinin in many instances.

The administration of soothing-sirups to infants has been a prolific source of fatal poisoning. Morphin is a favorite method of suicide because of the painless death which it causes, but it is not so frequently used for the murder of adults as some of the more rapidly acting poisons, because the symptoms are apt to attract attention and treatment is so commonly successful. It is more commonly used for the murder of infants, however, and unfortunately, statistics on this score are probably of little value.

The importance of determining from what part of the cadaver any morphin was recovered may be illustrated by the following: A woman was found dead in a bath-tub of water. The person accused of her murder maintained that the dead woman had taken morphin as a preliminary to self-destruction by drowning. Morphin was found in the gastro-intestinal tract, but the chemist had not examined the duodenum and the ileum separately, and could give no information as to the source of that part of the recovered morphin. Fortunately, he recovered a notable amount from the gall-bladder, showing conclusively that it had been absorbed; it seemed so improbable that the woman could have carried out the purpose of drowning herself after the morphin she had taken had been absorbed into the circulation, that the accused was led to confess.

The fatal dose of morphin varies so widely with the circumstances attending its administration that it is impossible to convey an accurate idea of the fatal dose in a single sentence.

It is often stated that infants are extraordinarily susceptible to all opiates, but several pediatrists have recently stated that very small children frequently take opium and morphin very well. It is not advisable for the general practitioner to disregard the almost universal testimony on this subject until we know more about the conditions under which opium and morphin may be given to infants with safety.

Reference to the pages of The Journal during the past few years will disclose the fact that many deaths have followed the administration of soothing-sirups to infants.

Morphin is oxidized readily into the harmless oxydimorphin. This change may even take place in old pills of morphin which contain acacia as an excipient; it may occur in solutions which are kept for some time; and it is induced almost instantly by potassium permanganate, which is therefore of great value in destroying any morphin with which it may be brought into contact in the stomach. This change also probably takes place slowly in the body when morphin has been taken.

The treatment of morphin poisoning demands the washing of the stomach at frequent intervals as long as the washings give any evidence of containing morphin; the bowels should be emptied by vigorous means in order to remove any of the poison that may have been excreted into the intestine or which reaches it from the stomach. The patient should be kept awake if this is possible without resorting to violent means.

Efforts should be directed toward sustaining the respiratory center; this may be so depressed that the respiration is insufficient long before death, and one should not wait for actual paralysis before beginning artificial respiration. Caffein is a valuable stimulant both for the respiratory centers and for the cerebrum. The free use of atropin is sometimes advised, but this is evidently a source of danger. It would be better not to use more than one, or possibly two, therapeutic doses of atropin, and if stimulation still be needed resort should be had to caffein. Since the tonic contraction of the pylorus may prevent the passage of fluid into the intestine, antidotal drugs should not be administered by mouth, except such as are added to the water for washing the stomach.

The treatment of chronic morphinism cannot be detailed here, but it may be stated that other narcotics, such as belladonna, are usually substituted for the morphin until the painful stage of withdrawal has been passed. Relapses are common, but the treatment can be taken repeatedly, and an ultimate complete cure may be effected.

Morphin is decomposed at a temperature slightly above that at which it distils, and this is very near the temperature which obtains in the opium pipe. Hence the question has arisen whether the opium-smoker actually absorbs morphin or not; it seems probable that some morphin passes over with the smoke and, being inhaled, is absorbed.

(To be continued)

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 437)

XVIII

Mumps

This is a highly infectious disease, with a long period of incubation, from two to three weeks. There is more or less of it always present in most cities, and there are likely to be epidemics of it in certain seasons of the year, more particularly, perhaps, in the spring and fall. Children and youth, especially boys and young men, are the most susceptible to it. Infants and adults are not so likely to have it. Possibly adults are less likely to have it because they have been rendered immune by unrecognized mild attacks in childhood.

While the typical localization of this infection is in one or both parotid glands, the submaxillary glands may be coincidently involved, or may be the only glands involved. As simple and harmless as this disease generally is, it may cause very high temperature, sudden cardiac failure, and frequently in young boys and male adults a complication, or metastasis, of orchitis, which is always serious. In girls the mammary glands or the ovaries may show metastatic inflammation.

The complication of inflammation of the sexual glands is frequently attributed to the patient's taking cold. While chilling may be a factor in causing such complications, young men especially who remain in the house or even in bed may develop this complication of orchitis, and the danger of such a complication is greater after puberty than before. The peculiar interrelation of the parotid gland and the testicles or ovaries is biologically interesting, but has not been explained. Other complications are diarrheal attacks with bowel cramps, and in rare instances serious meningitis occurs. It is rare that more than one testicle is affected. This is exceedingly fortunate, as this testicle may be long hypertrophied and later atrophy and become permanently sexually insufficient. It is probable that the same history is true of an ovarian complication, and may be an undiagnosed cause of some forms of ovarian pain and dysmenorrhea.

The parotid glands in this affection seem to show no tendency to suppurate, but parotitis, whether the epidemic form or a complication of some other disease, may cause serious cardiac depression. Even with high temperature in epidemic parotitis the pulse will often be found abnormally slow, at least for the height of the temperature.

Any great amount of manipulation of the inflamed parotid gland in mumps should be condemned as tending to cause absorption into the circulation of depressant toxins or secretions. This caution is not unique, but is parallel with the danger from too much manipulation of a hypersecreting thyroid gland, causing absorption into the blood of cardiac depressants.

The prognosis when meningitis is present is serious. Deafness has been caused, and even an optic neuritis has been stated to occur. Sudden death occasionally occurs without any assignable cause, except a sudden upright position after a patient has been in bed. Albuminuria may be present with high temperature, and acute nephritis has occurred. Endocarditis is another rare complication.

The white blood count in this disease os more or less characteristic, there being a lymphocytosis, although the whole number of leukocytes may vary, early in the disease being below normal. Barach[1] states that there is a leukopenia due to a decrease in the polynuclear cells, both relatively and absolutely, all through the disease. On the other hand, Feiling[2] states that there is always a slight increase in the total number of leukocytes. Barach also states that the mononuclear cells are relatively and absolutely increased. As the blood returns to normal the eosinophils, which have been almost absent, return in their usual numbers. This blood count is very distinct from the leukocytosis that is apt to be present if the gland is infected secondarily and an abscess is liable to form, in which case there would be a polymorphleukocytosis.

Contagium from this disease is probably pretty direct, that is, by close contact; but the contagium may be transmitted from the very early stages of the disease to perhaps some time after the disease is in abeyance. It has not been shown that animals are affected by the disease.

A patient with the disease should generally be isolated, and the attack will often be milder if the patient remains in bed. Although the disease can be serious, it is generally so mild in children that it is sometimes a question whether other children of the same family should not be allowed to contract it, for the reason that one attack generally confers immunity for all time, and the disease is much more serious in adults, especially in young men, than in children. Of course, an infected child, even though very mildly sick, is immediately sent home from school. On the other hand, doubtless not a few children with very mild cases are unwittingly allowed to remain at school.

The disease generally begins in one parotid gland and quickly goes to the other, although not infrequently only one gland is affected. Occasionally the submaxillary or sublingual glands are the only ones attacked, and these cases may spread the mumps before the diagnosis is made. The inflammation in the first gland affected generally reaches its height in about four days, and the gland generally has returned to its normal size in from six to eight days. If the other gland is not quickly inflamed, but becomes inflamed later, the duration of the disease will be prolonged. The fever is generally mild, but it may be very high, and in such instances there is always likely to be more or less cardiac depression.

The same care of the child's surroundings in school should be given as in other contagious diseases to prevent the infection of others. The nurse or the mother should understand that infection is doubtless contained in the mucus and secretions of the mouth and throat; consequently infection will be given by close contact, as by kissing, by handkerchiefs, eating utensils, pencils, bedclothing, etc.

TREATMENT

The disease is so mild that it may not require any special treatment. Pain in the infected glands is rarely severe, and is modified by dry warmth or simple absorbent-cotton applications, and by any oily application, the latter to relax the tension of the skin over the swollen gland. For this purpose olive oil may be used, or petrolatum, or an ointment may be made with 10 per cent. methyl salicylate in petrolatum. It is inadvisable to use ice or cold applications to the parotid glands in mumps.

The diet should be mild, the bowels kept free, and in simple cases medicinal treatment is not needed. If the fever is very high, one or two doses of antipyrin or acetanilid may be given, with the knowledge that cardiac depression readily occurs in this disease. Hot drinks, as hot lemonade or hot tea, with a little alcohol in some form for its physiologic action in dilating the peripheral blood-vessels and promoting perspiration, is a satisfactory method of reducing the temperature. Tepid sponging may be of benefit, and hot sponging should be given the patient daily if he is too ill for a hot bath.

If a testicle is affected, the lesion is generally an orchitis, or it may be an epididymitis. Ice and cold applications are inadvisable in this metastasis from mumps. Warm, moist applications often relieve pain; but if the testicles are kept elevated and surrounded by absorbent cotton, and if perhaps some oil or fat, such as petrolatum, is applied, the inflammation will probably go away as rapidly as by any other treatment. Strapping is inadvisable in this complication. Any massage, or the rubbing in of any ointment or other preparation in this kind of orchitis, or to the parotid glands, is inadvisable in mumps. Ichthyol applications in from 10 to 20 per cent. strength, either in petrolatum or in olive oil, or glycerin and water, have been largely used locally in this inflammation. Lead and opium wash has been frequently used; but the less this inflamed gland is manipulated, the better.

If the mammary gland becomes metastatically inflamed, the treatment is about the same as that for the parotid. If it is decided that the ovary is inflamed, but little can be done, except absolute rest and the administration of a sedative if there is pain. If there is much pain from any of these inflamed glands, morphin or codein may be advisable if it seems unwise to give a coal-tar analgesic.

(To be continued)

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[1] Barach, J. H.: Morphology of the Blood in Epidemic Parotitis, Arch. Int. Med., December, 1913, p. 751.

[2] Feiling, A.: Lancet, London, July 12, 1913.

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SATURDAY, FEBRUARY 6, 1915

PLASMA REMOVAL—PLASMAPHAERESIS

Reference to text-books will make evident that venesection is by no means an entirely discarded practice. Bloodletting as a professional procedure is known to have been carried out long prior to the era of Hippocrates, who speaks of it as having been frequently performed. Hippocrates and Galen had advised copious bleeding largely from the arm on the affected side in pleurisy and pneumonia. That practice was gradually abandoned as Greek traditions were lost sight of, and finally the Arabs substituted something entirely different, the pricking of a vein in the foot in order to let blood flow drop by drop. The ancient Greek practice was later revived by a Parisian physician named Brissot; but it was "the modern Galen," Jean Fernel, who was especially responsible for the revival of bleeding during the first half of the sixteenth century. Something of the subsequent history of the time-honored but often debatable venesection of later medical practice is known to most physicians. The admitted harmful consequences of a serious procedure of this sort finally led to its almost universal abandonment a generation or two ago. There are now signs of a revival of interest in the discreet use of bloodletting.

To remove more than one-third of the circulating blood is always fraught with danger. Even this quantity cannot be withdrawn with safety under various conditions. The drawbacks of venesection are dependent on both the immediate and the subsequent effects of the anemia which it produces. The danger of seriously reducing the oxygen-carrying capacity of the blood by the removal of a large number of erythrocytes in the blood withdrawn is admittedly a serious one, particularly in certain cases such as aneurysm, cardiac decompensation with low blood-count, and in various toxemias in which a venesection might be indicated. The loss of great numbers of blood-cells entails a prolonged effort on the part of the hemopoietic organs for regeneration.

The restoration of the liquid medium of the blood either from stores of reserve materials or by synthesis from the nutrient products absorbed from the alimentary tract seems to be a far easier physiologic performance than the regeneration of the cells of the blood. If, therefore, the withdrawal of fluid from the circulation could be carried out without the loss of these corpuscular elements of the blood, a decided advantage might be gained. At the Johns Hopkins Medical School, Abel, Rowntree and Turner[1] have attempted to devise a process by which this end may be attained. The underlying idea has been to undertake repeated removal of considerable quantities of blood, separating the corpuscles by vigorous centrifugalization, replacing the plasma by Locke's fluid, and reinjecting this together with the sedimented blood-cells. The preliminary experiments on animals have shown that it is possible to withdraw without apparent injury quantities of blood-plasma that exceed several times the maximum amount of blood that can be safely drawn by the usual method of venesection, provided the corpuscular elements of the blood, suspended in a suitable medium, be returned to the vascular system after each bleeding. The procedure has been termed plasmaphaeresis (from ἀφαίρεσις, a withdrawal).

It cannot be emphasized too strongly that this interesting work is as yet entirely in an experimental stage. Whether or not it shall become applicable to human conditions remains to be learned. Meanwhile it may not be vain to speculate on the prospects involved. The possibility of increasing or decreasing (if only temporarily) the volume of fluid in the vascular apparatus, or of removing an excess of deleterious substances with the plasma, suggests a way for the use of a method of this kind in cases in which bleeding has hitherto been contra-indicated because of the attendant anemia; it would appear doubly advantageous for the patient in most of those instances in which venesection is now being done with good result. What has actually been accomplished in the preliminary trials on dogs shows that it is quite possible to withdraw by repeated bleedings, in a single day, a volume of blood more than twice that ordinarily contained in the body with no apparent injury to the subject if only the corpuscles are returned after each bleeding.

To put the method to a severe test, plasmaphaeresis was carried out on nephrectomized animals. Obviously, the removal of both kidneys, with the consequent suppression of renal excretory function, is a severe test for a therapeutic procedure. Nevertheless there was evidence of a relief of the symptoms consequent on bilateral nephrectomy by the withdrawal of plasma with its content of accumulated waste products. The improvement in the clinical condition of the animals thus treated was marked, and they lived longer than the untreated control subjects.

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[1] Abel, J. J.; Rowntree, L. G., and Turner, B. B.: Plasma Removal with Return of Corpuscles, Jour. Pharmacol. and Exper. Therap., 1914, v, 625.

In the ordinary cases of plasma removal with return of the corpuscles there has been no evidence that the withdrawal of these considerable quantities of blood has a harmful action which is other than temporary. The urine has never become abnormal. It is, of course, not impossible that the resistance of the red corpuscles may be diminished by the change of medium to which they are subjected when the plasmaphaeresis is carried out on an extensive scale. Regeneration of plasma proteins is doubtless accomplished very promptly owing to a large "factor of safety" in this function. Fibrinogen is known to be regenerated very rapidly.[2]

One naturally reverts to the possibilities of application of methods like the one here outlined in human therapy. The Baltimore investigators remind us that centrifugated mammalian blood-corpuscles are said to retain their stability when kept on ice for four or five days and may then be reinjected and function normally.[3] In view of this fact a supply of human corpuscles *might possibly* be kept *in this manner* in operating-rooms for rapid injection in emergencies that would otherwise prove fatal.

In still another field, further applications suggest themselves. In the preparation of antitoxic serums, great economy might be effected in the use of horses if the method were found to be applicable, since, instead of bleeding a few liters every two weeks, many more might be taken in the same or even shorter intervals if the animal did not have to regenerate any morphologic elements.

RELATION OF IODIN TO THE THYROID AND OTHER TISSUES

Soon after the discovery of iodin in ever-present though small quantities in the thyroid gland, a search for the element was made in many other organs and tissues of the body. One investigator, Justus,[4] in particular, heralded the widespread distribution of iodin in the animal organism. The quantities reported were extremely small, being expressed in terms of hundredths of a milligram per hundred grams of tissue. This represents a degree of dilution at which methods of chemical analysis must be exceptionally exact and the technic unusually careful to lend any value to data of the magnitude mentioned. Nevertheless physiologists have become committed to the possibilities represented by minute amounts of active substances and the figures recorded by Justus have readily found their way into the literature.

It would not be surprising, after all, if an element as widely distributed in nature as is iodin, even though the absolute quantities are small, were to find its way into various parts of the living organism. When iodids are taken into the body they circulate widely and can be found in various places. The distribution may even be somewhat unlike in different parts of the system.[5] But ordinarily when the intake of iodid ceases, the element soon disappears from the tissues with the exception of the thyroids. In these glandular structures it is retained not in a readily diffusible form or in some loose chemical affinity, but rather in a unique organic combination that leaves no doubt of an active cellular process whereby a new iodin-bearing compound in the tissue results. The iodin becomes an integral part of some of the thyroid protein. This is something quite different from a mere deposition of the element such as occurs when iodids or other halogen compounds are being furnished freely to the individual.

These facts, including on the one hand the reputed widespread occurrence of iodin in the body, and on the other hand the apparently unique capacity of the thyroids to "fix" the element in a functional way, have raised the question as to the specificity of the latter phenomenon. Cannot iodin be "fixed" or organically bound by other cellular structures? Blum and Grützner,[6] who have devoted attention to the problem, conclude that the thyroids stand alone in this metabolic phenomenon among the tissues of the higher animals. Other organs may now and then exhibit the presence of iodin, but its occurrence there in contrast with the thyroids is irregular and uncertain; and it is found derived from the intake and in inorganic relations rather than in special organic combination. Even when iodids are administered freely the formation of iodized proteins has never been observed outside of the thyroid structures. These alone are entitled, in the light of our present knowledge, to claim a content of iodin as something physiologically characteristic. Iodin is therefore presumably not an essential component of every living cell.

THE CONDITIONS OF INDUSTRIAL ACCIDENTS

The enactment of laws in various states on workmen's compensation for injuries has aroused increased interest in the statistics and physical and psychic conditions of industrial accidents. The total number of these accidents is almost appalling. The lowest estimate places the fatal accidents to adult workers in the United States at 35,000 a year, with an additional 1,250,000 non-fatal accidents. The Massachusetts Industrial Accident Board, on the other hand, placed the number of workers killed by accident yearly at 75,000, which apparently includes not only adults, but also workers of all ages, while the number of injured of the same classes was placed by this Massachusetts authority at 3,000,000 or over. An earthquake in a foreign country that kills half this number of persons and maims one-fiftieth of those injured in our United States industries is spoken of as catastrophic.

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[2] Whipple and Goodpasture: Am. Jour. Physiol., 1914, xxxiii, 50, 70.

[3] Boruttau, H.: Nagel's Handb. d. Physiol. d. Menschen, Ergänzungsband, 1910, p. 32.

[4] Justus, J.: Ueber den physiologischen Jodgehalt der Zelle, Virchows Arch. f. path. Anat., 1904, clxx, 501; clxxvi, 1.

[5] Loeb, O.: Arch. f. exper. Path. u. Pharmakol., 1907, lvi, 320.

[6] Blum, F., and Grützner, R.: Studien zur Physiologie der Schilddrüse, vi, Jodspeicherung und Jodbindung im Organismus, Ztschr. f. physiol. Chem. 1914, xcii, 360.

Among the interesting elements of these accident statistics is the fact that a greater proportion of accidents occurs on Monday than on any other day of the week. Accidents are said to be due often to fatigue. As, after the day of rest on Sunday, workmen should be less fatigued than on other days, some other factor must be sought to explain this feature of the statistics. It has been suggested that the "blue Monday" accidents are really due to the fact that workmen take more spirituous liquor on Sunday, and thus become unnerved and more liable to accidents during the following twenty-four hours. There is, perhaps, something in this contention, though it has been disputed. In the Massachusetts Industrial Accident Board Reports, in which the official figures are given, there is scarcely more than one-twentieth more accidents on Monday than on Tuesday, while Tuesday is not much above the average in the number of accidents reported for other days. Saturday, of course, shows a noteworthy reduction, because of the half holiday in some trades.

By far the larger number of accidents occur at about 10 a. m. and 3 p. m. This fact is confirmed by the reports of two state boards, Washington and Massachusetts, which have secured rather careful records. As they represent the extremes of the country, the conclusions from their statistics would seem to be incontrovertible, though the fact is not what might naturally be expected. The State of Washington Industrial Commission[1] says, "These results seem to disprove the theory that fatigue is the prominent cause of accidents, because accidents are here shown to happen at the hours when the workmen are least fatigued." On the fatigue theory it might naturally be expected that most accidents would happen after 11 a. m. and 5 p. m. The actual hour of the high point of the curve of accidents shows how important are the facts and how necessary of proof the theories.

After much discussion, the tendency to speed up employment has been incriminated, as the predisposing condition for the occurrence of accidents. This desire comes over the workman when he is not yet fatigued, but has been employed for several hours. He starts the morning's work "cold," and as he warms to his work, the danger of mischance because of haste becomes greater. Just when the speeding up reaches a climax in the morning hours, most accidents happen. The same thing is true in the afternoon. Workmen feel sluggish after their lunch, but after an hour of work warm up again, and by about 3 o'clock they are doing their most rapid work, and are at the same time more subject to accident.

With regard to accidents among children, however, there is no hour of maximum. Accidents occur at all times, and they are comparatively much more frequent among children than adults. The United States Bureau of Labor reported that "there is clear evidence of great liability to accident on the part of children. Though employed in the less hazardous work, their rates steadily exceed those of the older co-workers, even when in that group are included the occupations of relatively high liability." This was said with regard to the Southern cotton mills, but the same thing is true of practically all industries in which children are employed.

The results of these accidents come to the physician. We are devoting much time to the prevention of disease, and we should be ready to give attention also to the prevention of injury. Virchow used to say that the ideal function of the physician, besides that of reliever of human ills, is to be the attorney of the poor for the prevention and relief of social ailments, and, above all, the prophylaxis of their physical consequences, whether in lowered health or in maiming injuries.

CULTIVATION OF LIVING TISSUES OUTSIDE THE BODY

The story of the cultivation of tissues outside of the living body has already lost much of its novelty. Though we can still easily count the time in terms of months rather than years, since the first demonstration of the development in vitro of isolated fragments made up of connective tissue cells, the fact has been established so conclusively and the technic developed so successfully that the cultivation of tissues in this way has already become a familiar practice in many laboratories. It is sometimes said that familiarity breeds contempt; but it may be wholesome at times to renew our acquaintance with the details of well-known scientific procedures and learn their present status. This is particularly desirable in the case of those persons who little realize the persistence and energy, the patience and forethought, which many of the permanent acquisitions of science demand on the part of investigators. We who share the results all too frequently fail to understand the laborious process by which success is attained. In this field the advice once given to an ambitious medical student may be reiterated: "Success is neither luck nor pull, but the longest, toughest job you ever tackled."

Not long ago Carrel[1] of the Rockefeller Institute for Medical Research called attention to the condition of a strain of connective tissue kept outside of the organism in a condition of permanent life. It was derived originally from a piece of heart extirpated from a chick embryo. The fragment pulsated for 104 days and gave rise to a large number of connective tissue cells which have since multiplied actively. The strain, after having undergone 358 passages, reached the twenty-ninth month of its life in vitro some time ago. It now appears that the proliferating power has in no wise diminished. During the third year of independent life of the connective tissue we are confronted with the remarkable fact that it shows greater activity than at the beginning of that period, and is no longer subject to the influence of time. Carrel remarks that if we exclude accidents, connective tissue cells, like colonies of infusoria, may proliferate indefinitely.

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[1] Report of State of Washington Industrial Commission for 1912, p. 178.

[1] Carrel, Alexis: Present Condition of a Strain of Connective Tissue Twenty-Eight Months Old, Jour. Exper. Med., 1914, xx, 1; see also Jour. Exper. Med., 1912, xv, 516. Ebeling, A.: Ibid., 1913, xvii, 273. Carrel, Alexis: Ibid., 1913, xviii, 287.

In this connection it is interesting to note some recent results for human tissues reported from the same laboratory. It has been possible, for example, to keep human fetal tissue, derived from fresh cadavers, in a condition of independent life for several generations.[2] This has led to the attempt to cultivate human sarcomatous tissue in the same manner. The first essay in the direction of growing human malignant tumor in vitro was made in 1911 by Carrel and Burrows.[3] The tissues were kept in a condition of survival for a few days, but no real cultures were obtained. Losee and Ebeling[4] have now succeeded in keeping cultures of such tissue in a condition of active life in vitro for several generations. Their method may therefore prove of value in the study of the growth of human malignant tumor.

THE VIRULENCE OF THE ORGANISM GROWN FROM POLIOMYELITIC TISSUES

Work during the past one or two years in this country and abroad has indicated possible methods for the control of poliomyelitis based on the discovery of mild or abortive cases of the disease. Of still greater importance, perhaps, is the demonstration of the presence of the virus of the disease in healthy persons who have been in contact with cases of poliomyelitis. Previous reference has been made[5] to the great epidemiologic importance of "carriers" of the infection of poliomyelitis who may harbor the infective agent in their nasal mucosa, and yet have shown no symptoms of the disease. The successful cultivation of the causative organism, with the methods of cultivation devised by Noguchi, prompted the hope by students of the disease that we were on the eve of the announcement of the production of methods of active or passive immunization.

It has been established that the only sure method of immunization of monkeys against infection with poliomyelitis is by an attack of the disease, and that injections of emulsions made from poliomyelitic animals, unless followed by an attack of the disease, could not be relied on to immunize. Occasionally it happened, when great care was observed in the process, that an animal was found resistant, but that at times, just when immunity might have been inferred, the animal developed paralysis. From a recent paper by Flexner, Noguchi and Amoss,[6] it appears that somewhat the same experience is had with the organism when grown in cultures, and that successive injections of cultures devoid of virulence do not induce infection or immunity, which is evidenced by the absence of antibodies in the blood and failure to resist infection when active material was used for inoculation. In one series of experiments, it was found that the inoculation of cultures was ineffective at the first, or even second or third inoculation, but was effective at a later injection, although the same material failed to induce infection in a fresh monkey used as a control. The deduction was made that in the course of the successive inoculations, under certain conditions, the resistance of the monkeys was gradually lessened so that infection was finally accomplished.

It is possible that there may be another, or at least partial, explanation for the resistance at times, and a later developed susceptibility. Anderson and Goldberger,[7] in their studies of typhus fever, found a considerable variation in the infectivity for monkeys of different strains of typhus fever blood and, in addition, brought out the important fact that about 22 per cent. of monkeys failed to react to a first injection, and 3.5 per cent. to three or more successive injections of material proved to be infective at the time for other monkeys. As with poliomyelitis virus referred to above, they found that repeated inoculations of typhus virus, unless followed by a typhus reaction, conferred no appreciable resistance to infection. In any case, it is fairly evident, from the results so far reported, that attempts to produce immunity by the use of cultures of the organism of poliomyelitis have not given much promise.

The paper of Flexner, Noguchi and Amoss gives additional evidence of a most convincing kind in support of their contention that the organism grown by them is the specific etiologic factor in epidemic poliomyelitis. It is hoped that further work along the lines of the experiments reported will be continued, and that out of it may come results of value for use in immunization against this dreaded disease.

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[2] Losee, J. R., and Ebeling, A. H.: Jour. Exper. Med., 1914, xix, 593.

[3] Carrel, Alexis, and Burrows, M. T.: Jour. Exper. Med., 1911, xiii, 387.

[4] Losee, J. R., and Ebeling, A. H.: The Cultivation of Human Sarcomatous Tissue in vitro, Jour. Exper. Med., 1914, xx, 140.

[5] The Entrance of the Infective Agent of Epidemic Poliomyelitis into the Body, editorial, The Journal A. M. A., Oct. 17, 1914, p. 1396.

[6] Flexner, Noguchi and Amoss: Jour. Exper. Med., 1915, xxi, 91.

[7] Anderson, John F., and Goldberger, Joseph: Natural and Induced Immunity to Typhus Fever, Jour. Infect. Dis., November, 1912.

Current Comment

PRESENT STATUS OF THE VACCINE TREATMENT OF TYPHOID FEVER

The use of vaccines in the treatment of typhoid fever is still in the experimental stage. Numerous reports have been published on the subject in the last six years, but the results as shown by the death rate are not convincing. One difficulty is that the average mortality rate cannot be accurately determined because epidemics vary greatly in virulence. Some observers report a slightly lower death rate among patients treated with vaccines. Watters,[1] in an extensive review of 1,120 such cases, reports that the mortality is slightly lowered with vaccines, that the duration of fever averaged ten days less than in cases treated as usual, and that the percentage of relapse is diminished. In addition, the patients appeared brighter mentally, showed less depression and had lower temperature than ordinarily. All authors represented in this series agreed that the vaccines (bacilli killed by heat and injected subcutaneously) at least did not harm. It appears from the statistics that the dosage of the vaccines used has very little effect on the fever curve, leukocyte count or the mortality rate. As many deaths are reported with small doses as with larger ones. Some observers believe that early in the disease the treatment may prove beneficial in relieving the symptoms, whereas after the fourteenth day no such effect is obtained. On the other hand, striking results are announced by Ichikawa[2] from intravenous injection of sensitized bacteria. Living bacilli were treated with serum from typhoid convalescents, then washed, and finally suspended in salt solution with 0.3 per cent. phenol. In his cases he was able to produce a sudden drop in fever to normal, after a slight initial rise, and rapid retrogression of symptoms. He found that his typhoid vaccine was effective also in paratyphoid fever. The results reported by Ichikawa are so striking that further investigation is indicated. R. Kraus[3] also mentions the occurrence of crisis and rapid recovery after the intravenous injection of typhoid vaccines in typhoid fever. Ichikawa explains his results by saying that in typhoid fever only a small amount of antibodies is produced, so that not all the bacteria are killed. By the sudden injection of a large number of sensitized bacteria, the production of antibodies is greatly increased and all the bacteria are killed. In the ordinary subcutaneous injections, the introduction of the bacteria into the blood stream is retarded by local reactive processes, and consequently there is not produced the sudden stimulation necessary for the production of so large amounts of antibodies as might be expected. Recenly Gay and Claypole[4] have described a specific hyperleukocytosis on injection of typhoid bacilli in animals already immunized with this bacillus. These investigators also obtain a sharp specific leukocytosis with sensitized cultures in normal animals. Probably the explanation of the prompt effect described by Ichikawa in typhoid fever patients injected with sensitized vaccine is to be found in a specific hyperleukocytosis. Certainly this appears a much more likely explanation than the very complicated one advanced by Garbat.[5] The question of the occurrence of hyperleukocytosis in typhoid patients injected with typhoid vaccine will have to be determined, however, before any definite opinion can be formed as to the mechanism of the action of sensitized or other vaccine in typhoid fever.

THE HARRISON LAW AS APPLIED TO PHYSICIANS

An abstract of the Harrison bill and the regulations thereto appears in this issue, page 532. After three years' discussion, this bill has finally become a law, being signed Dec. 17, 1914, and becoming effective March 1, 1915. Its object is to limit the sale of habit-forming drugs to legitimate purposes by requiring a record of all transactions in such drugs. Any physician who dispenses or prescribes any drug preparations containing opium or coca leaves or any of their derivatives is required to register with the collector of internal revenue of his district and to pay an annual registration fee of one dollar. This is prorated for the period from March 1, 1915, to July 1, 1915, at 34 cents. Physicians dispensing their own drugs must use the blank prescribed by the commissioner of internal revenue in ordering their supplies, and must keep a record of all habit-forming drugs dispensed to patients. Physicians prescribing drugs must sign their full name and give their registration number with the name and address of the patient on each prescription. All persons having such drugs in their possession March 1, 1915, must make an inventory of such drugs showing exactly the amount on hand at that time. This inventory, which must be verified by affidavit, is kept by the individual and is not filed with the commissioner. One important point of controversy between the physician and the druggist is settled by the ruling of the commissioner of internal revenue. Only the original of prescriptions containing these drugs can be filled. The refilling of prescriptions is forbidden. Patients desiring an additional supply of such drugs must procure an original prescription from the physician. The law also requires a general registration of all physicians, dentists, druggists and veterinary surgeons, and only such persons will be allowed to dispense or prescribe these drugs. This law is a legislative experiment. Some time, many regulations and several amendments will probably be necessary before it can be reduced to smooth working order. In the meantime, physicians should at once take two precautions: They should make immediate application to the deputy commissioner of internal revenue of their district for registration, and they should make an inventory of all drugs and drug preparations in their possession containing opium or cocain, so that when the law goes into operation, March 1, each physician may have written evidence of the amount of these drugs in his possession at that time. Whether or not it will be possible to put so sweeping a measure into effective operation in so short a time remains to be seen; but physicians can give material assistance in the enforcement of the law, and can relieve themselves of any danger of embarrassment by taking these two steps at once.

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[1] Watters, W. H.: Med. Rec., New York, 1913, lxxxiv, 518.

[2] Ichikawa: Ztschr. f. Immunitätsforsch. u. exper. Therap., 1914, xxiii, 32.

[3] Kraus, R.: Wien. klin. Wchnschr., 1914, xxvii, 1443.

[4] Gay, F. P., and Claypole, E. J.: Specific and Extreme Hyperleukocytosis Following the Injection of Bacillus Typhosus in Immunized Rabbits, The Journal A. M. A., June 21, 1913, p. 1950; Specific Hyperleukocytosis, Arch. Int. Med., November, 1914, p. 663.

[5] Garbat, A. L.: Sensitized versus Non-Sensitized Typhoid Bacteria in the *Prophylaxis* and Treatment of Typhoid Fever, The Journal A. M. A., this issue, p. 489.

HOSPITAL EFFICIENCY

In May, 1914, the Philadelphia County Medical Society appointed a committee[1] to consider "ways and means by which the efficiency of the hospitals in Philadelphia may be increased." This committee made an extensive study of the hospital situation in Philadelphia. The three reports of the committee embodying the results of this study, together with an introduction on "The Principles of Hospital Efficiency," by the secretary of the committee, are now issued in pamphlet form. One of the most important findings of the committee is that no standards as yet exist by which the efficiency of a hospital may be measured. The operating expense of one institution may be three dollars a day for each patient, and that of another, little over a dollar a day for each patient. Is the latter figure a credit or a disgrace? One dispensary physician may treat twice as many patients in an afternoon as his colleague working under the same conditions. Which one is accomplishing the most good? Standards of efficiency must be formulated and applied before such questions as these can be answered. Naturally, this lack of standards is reflected in chaotic conditions. For instance, the committee made a careful study of the record systems used in sixteen of the largest hospitals in Philadelphia. In eight of these, some systematic effort was being made to secure the completeness and accuracy of the records, the chief resident physician or the registrar finally checking the records. Four different systems of classification were being used in these eight hospitals. Only three of the sixteen hospitals were maintaining separate files for recording all operations performed in the hospital, grouping together all operations of like character, so that the number of all operations performed during a given period, with the results of each, could be quickly ascertained. The committee states that in 31 per cent. of the hospitals visited, the records were so kept as to be useless for scientific purposes. A number of recommendations are made for the improvement of record systems, the establishing of social service departments, the prevention of dispensary abuses, etc. In fact, the report contains many valuable suggestions for those who are interested in the improvement of hospitals, and deserves to be widely read.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ILLINOIS

Dinner to Dr. Steele.—Friends of Dr. Daniel A. K. Steele, dean of the Medical School of the University of Illinois, Chicago, gave a dinner in his honor, February 1, at the Hotel La Salle, at which about ninety were present. Dr. Charles S. Bacon presided as toastmaster.

Personal.—County Judge Scully has named the following advisory commission to assist in the hearing of lunacy cases in Cook County: Drs. Hugh T. Patrick, Peter Bassoe, and Harry L. Pollock, Chicago.——Dr. John B. Murphy, Chicago, was elected president of the Wisconsin Society of Chicago at the annual meeting, January 26, and Drs. Albert J. Ochsner and Edwin B. Tuteur, Chicago, were elected vice-presidents.

Tuberculosis Institute Meeting.—The ninth annual meeting of the Chicago Tuberculosis Institute was held January 28, and the following officers were elected: president, Dr. Theodore B. Sachs; vice-presidents, Dr. Robert H. Babcock and Mr. George W. Perkins; secretary, Mr. Sherman G. Kingsley, and treasurer, Mr. David R. Forgan. The institute passed a resolution opposing the proposed plan of incorporating the Municipal Tuberculosis Sanatorium in the consolidation bill, commending the efficient management of the board of directors of the sanatorium, and expressing its "emphatic opinion that the best interests of the tuberculosis problem in Chicago demands a continuance of the present administration arrangements of the Municipal Tuberculosis Sanatorium, and that the municipal tuberculosis sanatorium law be allowed to remain unchanged."

Foot and Mouth Disease Injunction Dissolved.—It is reported under date of February 2 that Judge Irwin of the Kane circuit court has dissolved the injunction prohibiting the slaughter of stock on account of the foot and mouth disease. At the annual convention of the Milk Producers' Association in Chicago, February 1, protest was made against the method of handling the disease by the federal and state officials, and particularly against the action of Governor Dunne in placing large dairy areas of the state under quarantine. It is said that from 3,000 to 4,000 cans of milk which daily come to Chicago are kept out by the action of the governor. The health commissioner, Dr. George B. Young, is reported to have asked Governor Dunne to rescind his action, the health commissioner promising to place at least fifteen inspectors on the work of inspection covering the prohibited area.

Chicago

Council Committee Approves Marriage Test Law.—The Chicago City Council Committee of Health on January 22, recommended the approval by the council and the enactment as a law of the bill providing that it shall be unlawful for any county clerk to issue a marriage license unless the applicants file a certificate, fifteen days before the issuance of the marriage license, that they are free from venereal disease.

Warning to Chicago Physicians.—A young man, possibly 25 years of age, giving various names and representing himself as a young medical graduate, has been calling on physicians and others, representing himself to be a Belgian refugee. He is very successful in gaining sympathy, and as a result has succeeded in getting money from many physicians, as well as from others. One of his stories is that he has an uncle, a surgeon, whose name is similar to that of the physician on whom he calls.

INDIANA

Isolation Hospital Secured.—The city health board of Indianapolis has purchased property owned by the Indianapolis Kindergarten Society, opposite the City Hospital, to be used as a ward for contagious disease.

State Eugenics Law.—Senator Neal's amended bill to provide a physical examination for bridegrooms was passed in the upper house by a vote of 32 to 12, January 21. The original bill required that the bride-to-be should also be required to present a health certificate before a license could be granted.

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[1] This committee was composed of Dr. Edward Martin, chairman, Dr. Charles B. Penrose, Dr. George E. de Schweinitz, Dr. William Krusen and Dr. John D. McLean. Copies of the report may be obtained from the secretary, Mr. Richard Waterman, 207 South Twenty-Second Street, Philadelphia, 2 cents being enclosed for postage.

Tuberculosis Foes Meet.—At the annual meeting of the Indiana Society for the Prevention of Tuberculosis, held in Indianapolis, January 21, all the officers were reelected. Resolutions were unanimously adopted in both branches of the legislature, January 20, providing for the setting aside of the first Friday in October, as disease prevention day.

Personal.—Dr. Charles LeRoy of the staff of the Northern Hospital for the Insane, Long Cliff, has entered the United States Public Health Service, with station at Kansas City.——Dr. Sidney G. Cortner, Otisco, was severely burned on the face and hands by an explosion of acetylene gas in his garage, January 6.—Dr. Samuel Hollis, Hartford City, is reported to be critically ill.

Amendment to Advertising Law.—In the legislature a bill has been introduced as an amendment to the pure advertising law. The amendment provides a minimum fine of fifty dollars for any advertising which is false or fraudulent, or which has a tendency to deceive the public or to impose on credulous or ignorant persons and so to be harmful or injurious to public morals or safety. If this amendment be passed it will eradicate most of the patent medicine manufacturers and advertising physicians in Indiana.

Medical Legislative Problems.—A spirited fight has taken place during the last week in the state legislature on two medical problems. The first, as to whether the chiropractors shall be recognized to the extent of giving them a state board of chiropractors or not. The committee in charge of this work has made a divided report on the same and the matter will have to be fought out on the floor of the legislature.——Second, the bill originated and authorized by Dr. John N. Hurty, Indianapolis, secretary of the State Board of Health providing for health officers who devote their entire time to the work is being antagonized by another bill which makes it optional with the county as to whether the health officer devotes his entire time or only part of it to the work. A conclusion has not yet been reached.

MARYLAND

Personal.—Dr. N. E. Berry Oglehart, Baltimore, entertained the Medical Dinner Club at his home in Baltimore, January 16.——Dr. Samuel A. Nichols, Dayton, is reported to be seriously ill with pneumonia.

Scarlet Fever Prevalent.—St. Mary's parochial school, Ilchester, has been closed by order of Dr. W. H. Gassaway, health officer, owing to an outbreak of scarlet fever among the pupils. Nine cases of the disease have developed. An outbreak of the same disease in an institution for children in Baltimore has led Dr. Nathan R. Gorter, health commissioner, to issue a warning against the disease. The fever has entered the city from the counties and seemed to be spreading from East Baltimore to West Baltimore. Dr. Gorter was notified of the outbreak in the institution by Dr. John F. Hogan, superintendent of Sydenham Hospital, Baltimore, who was asked to care for the children who had developed scarlet fever. He, however, had to decline owing to the situation in other parts of the city.

Health Exhibit Arranged.—A special exhibit in connection with Public Health Week opens on February 6 in the Medical Library, Baltimore, showing the old and the new methods of caring for the insane, prepared by the Sheppard and Enoch Pratt Hospital; an exhibit on "Patent Medicines and Other Frauds," a Health Department exhibit; also the work of the Public Athletic League and the Maryland Workshop for the Blind, and finally an exhibit of lifesaving machines by the Life Saving Devices Company. The Medical and Chirurgical Faculty has offered a prize of $10 to any person, not a physician, for the best essay of not over 1,500 words on "What I Learned from the Health Exhibit." Another prize of $10 is offered to all pupils of the secondary schools of the city on the same subject.

MASSACHUSETTS

Cutter Lectures.—The Harvard Faculty of Medicine has announced that the Cutter series of lectures on preventive medicine will be delivered by Dr. Victor C. Vaughan of the University of Michigan and Surgeon Joseph Goldberger, U. S. Public Health Service.

Health Officials Die.—Charles E. Davis, Jr., for nearly forty years secretary of the Boston Board of Health, died January 5, in a hospital in Montreal.——Thomas J. Lally, director of public health of Salem, is said to have committed suicide in a hotel in Lynn, January 21.

Boston Board of Health.—The city council has given its approval of Mayor Curley's plan to reorganize the Board of Health as a single commissioner, as has been done in the State Board of Health. The mayor's candidate for this position is P. A. Surgeon Richard H. Creel, U. S. Public Health Service.

Organize Against Cancer.—A meeting was held in Boston, January 17, of physicians and laymen with the object of educating the public in the prevention of cancer. Dr. J. Collins Warren presided at the meeting. It is proposed to open an office, prepare literature for distribution, and provide lectures to address organizations throughout the city.

State Board of Health.—The new health commissioner of Massachusetts has appointed, with the approval of the Council, four of the former employees: X. H. Goodnough, chief engineer; H. W. Clark, chemist; William C. Hanson, Boston, records; and Herman C. Lythgoe, foods and drugs. Prof. Theobald Smith, Boston, being unable to remain as pathologist, Prof. Milton J. Rosenau, Boston, has been given that position, necessitating the appointment of another man to fill his place in the council. Dr. Eugene R. Kelley of Seattle, Wash., takes the division of communicable diseases.

Personal.—Dr. Theobald Smith has been invited to come to Illinois to study the foot-and-mouth disease and suggest means for saving the affected herds.——Dr. Wilson G. Smillie, Boston, has been appointed assistant in preventive medicine and hygiene at Harvard Medical School.——Dr. William J. Delahanty, Worcester, has been appointed trustee of the Worcester State Hospital in place of Dr. Samuel B. Woodward, resigned.——Dr. Wilfred E. Rounseville has been appointed city physician for Attleboro.——Dr. Thomas F. Joyce has been appointed resident physician at the Lawrence City Home.——Dr. N. Emmons Paine, West Newton, has been appointed trustee of the Westboro State Hospital.——Dr. Elizabeth A. Carleton, founder and president of the Home for Aged Couples, Boston, was reelected president of the institution at its annual meeting, January 12.——The Holyoke Association for the Prevention and Relief of Tuberculosis, at its annual meeting, January 11, reelected Dr. Carl A. Allen, president, and elected Drs. George L. Taylor and Julia Bauman, vice-presidents.——Dr. John J. Dowling has been elected superintendent of the Boston City Hospital, vice John H. McCollom, retired.——Dr John D. Adams has been elected president; Dr. Frederick C. Cobb, vice-president, and Dr. Elmer W. Barron, secretary-treasurer, of the medical staff of the Boston Dispensary.

NEW YORK

Antivaccinationists in Albany.—The Albany *Times* of January 27 contained a half-page article headed "Urgent Vaccination Warning," signed and paid for as an advertisement by Charles M. Higgins, treasurer of the Anti-Vaccination League of America, calling on the friends of the league to oppose legislation proposed in the state legislature, which it is asserted takes the authority to order vaccination from the the local school authorities and places it in the boards of health. The article contains the usual misinformation concerning the dangers and accidents of vaccination, and ignores all facts as to the efficacy of vaccination. It calls for an "amendment to the constitution for medical freedom," and demands specifically that all compulsory vaccination be prohibited and that all "vaccinating doctors and members of medical societies" be removed "from the head of our departments of health and vital statistics and place able laymen in their places with honest doctors and statisticians under them," etc. The "warning" is addressed to all "public, private and parochial schools in the state."

New York City

Harvey Society Lecture.—The eighth lecture of the Harvey Society series will be given at the New York Academy of Medicine, February 13, at 8:30 p. m., by Dr. John A. Fordyce on "Some Problems in the Pathology of Syphilis."

Personal.—Dr. Abraham Jacobi made the address before the People's Institute and the American League to Limit Armaments at Cooper Union, January 25. He was of the opinion that it would be well for this country to have a secretary of peace instead of a Secretary of War.——As the result of a competitive examination for the director of public health education, Dr. Ira S. Wile secured first position; Dr. Winthrop Talbot, Flushing, second; and Dr. Charles F. Bolduan, third.

OHIO

Honor Oldest Member.—In honor of Dr. Isaac Kay, Springfield, the oldest member of the Clark County Medical Society, a banquet was given in his honor, January 25, at Springfield. Dr. Kay was presented with a silver loving cup on behalf of the society by the president, Dr. John J. Moore, South Charleston.

Personal.—Drs. Joseph C. Placak and Archibald N. Dawson have succeeded Drs. John H. Lowman and Robert H. Bishop, Jr., as members of the visiting staff of the tuberculosis department of the Cleveland City Hospital.——Dr. Harry B. Blystone, Columbus, was operated on for appendicitis at Washington, Ia., recently, and is reported to be doing well.——Dr. Daniel L. Mohn, Ashland, fell on a slippery sidewalk, January 22, sustaining a severe contusion of the hip.——Dr. Addison D. Hobart, Toledo, was operated on in the Jewish Hospital, Cincinnati, January 15, for the removal of gall-stones, and is reported to be doing well.——Dr. Myron S. Clark, Mentor, was operated on in Johns Hopkins Hospital, Baltimore, recently.——Dr. James B. Ray, Scioto, is reported to be seriously ill with disease of the gall-bladder.——Dr. Harry B. Harris, Dayton, has been elected president, and Dr. George P. Dale, Dayton, secretary, of the staff of the Miami Valley Hospital, Dayton.——At the annual meeting of the People's Hospital Company, Akron, Dr. William S. Chase, Akron, was elected president and chief of staff and Dr. George M. Logan, Akron, secretary.——Dr. Ira J. Mizer has been appointed a member of the Municipal Civil Service Commission of Columbus.——Dr. Wilbert A. Hobbs, East Liverpool, fell on the ice in that city, December 23, fracturing his right clavicle.

Cincinnati

Personal.—Dr. Clifford C. Kennedy has resigned as assistant superintendent of the Cincinnati Tuberculosis Sanatorium and has opened an office in Cincinnati.——Dr. Ellis R. Bader, assistant receiving physician at the Cincinnati City Hospital, has been appointed receiving physician, vice Dr. Charles J. McDevitt, resigned to enter the U. S. Public Health Service.——Dr. William J. Manning has been elected state medical examiner of the Catholic Knights of Ohio.——Dr. Edwin M. Craig, Norwood, was injured January 2, in a collision between his automobile and an interurban car.——Dr. and Mrs. Edward S. McKee, who have been abroad for two years, have returned.

PENNSYLVANIA

Vistors to Pittsburgh.—Dr. Simon Baruch, New York City, was given a luncheon at the Fort Pitt Hotel, January 20, by the Civic Club of Allegheny County, at which he delivered an address on "The Economic Value of Public Baths." On January 21 Dr. Baruch was the guest of the medical profession of Pittsburgh and was entertained by the College of Physicians, and in the evening he delivered an address.——Dr. Abraham A. Brill, New York City, was the guest of the Montefiore Clinical Society, Pittsburgh, January 25, and read a paper on "Psycho-Analysis; Its Scope and Limitations."

Philadelphia

Portraits Presented.—At a stated meeting of the College of Physicians, February 3, a portrait of Dr. René La Roche was presented on behalf of the donor, Mr. J. Percy Keating, by Dr. William J. Taylor, and a portrait of the late Dr. Louis A. Duhring was presented by Dr. David Riesman.

Personal.—Dr. S. Lewis Ziegler has been appointed director of the Department of Public Health and Charities, vice Dr. Richard H. Harte, New York City.——Powell F. Fenton, son of Dr. Thomas H. Fenton, sailed, January 30, for France, where he will become attached to the engineer corps of the American Ambulance Hospital of Paris.

Demand New Hospital.—At the annual meeting of the Philadelphia County Medical Society, January 20, resolutions were adopted declaring that the present Philadelphia General Hospital is inadequate, and if permitted to continue without alterations will endanger the prestige not only of the state, but the medical profession, and demanding that councils make available $1,000,000 for the reconstruction of the building. A committee, consisting of Drs. William H. Walsh, Charles A. E. Codman, Herman B. Allyn, W. M. Late Coplin, and William L. Rodman presented the resolution to the councils.

SOUTH CAROLINA

Contracts to Care for Sick of Charleston.—A communication from the Medical Society of South Carolina to the city council of Charleston offering to renew the contract between the city and the society for the treatment of the pauper sick at the Roper Hospital, for a five year period for $40,000 a year, was approved by the city council, December 31. The present contract calls for an annual payment of $37,000.

Personal.—P. A. Surg. R. M. Grimm, U. S. P. H. S., has arrived in Spartanburg to take charge of the Federal Pellagra Hospital, succeeding P. A. Surg. R. A. Herring, transferred to New Orleans.——Dr. Joseph O. Wilhite, Anderson, has been reelected chairman and Dr. John B. Townsend, Anderson, secretary of the medical directors of the Anderson County Hospital.——Albert W. Todd, Charleston, has been appointed a member of the board of trustees of the Medical College of South Carolina, succeeding Dr. William A. Tripp, Easley, resigned. Dr. Robert S. Cathcart, Charleston, previously appointed, declined to accept.——Dr. Frank D. Mower, Newberry, has been appointed assistant physician to the State Hospital for the Insane, State Park, succeeding Dr. Angus B. Patterson, resigned.——Dr. Edgar A. Hines, Seneca, has been appointed superintendent of the Anderson City Hospital.

TENNESSEE

Small-Pox, Not Plague, at Chattanooga.—Public Health Reports, Jan. 29, 1915, contains a report of an investigation by government physicians of the conditions at Chattanooga, from which point plague was reported. Instead of plague, the investigators found that the trouble at Chattanooga was small-pox of a virulent form, undoubtedly brought from Mexico. It is said that virulent small-pox is being continually imported from Mexico into the states bordering on that country, and has also reached points in Oklahoma and Arkansas. The policy of denial of the presence of disease, which has been followed in some places, is deprecated in the report of the government investigators, who say that this course creates in the minds of people of neighboring communities fear and dread out of all proportion to the real danger, and results in unnecessary and injurious quarantine against communities having the infection. The virulent infection in Chattanooga started from a man who arrived from El Paso, Tex., Nov. 9, 1914, suffering from a severe case of small-pox, from which he died. Two other cases of confluent small-pox developed in the same house. The total number of cases from November to January 15 was 56, with 16 deaths, a fatality rate of 28.6 per cent. In December there were 38 cases, of which 13 patients died. From January 1 to 15 there were 15 cases with 2 deaths. Most of the fatal cases were of the hemorrhagic type. With the exception of the cases of varioloid, all of the cases have been of the hemorrhagic or confluent type.

WISCONSIN

Laboratory for Superior Physicians.—At the last meeting of the Douglas County Medical Association at Superior, it was decided to purchase or rent a building to be used by the physicians of the city for laboratory and research work.

Hospital Social Service Department.—A social service department has been established in the Children's Free Hospital in Milwaukee in charge of Gertrude Martin, who in addition to a nurses training has had three years' experience in the Boston Dispensary. Cooperation with the visiting nurses of Milwaukee is to be arranged. There are now more than 150 social service departments connected with hospitals and dispensaries in the United States.

Personal.—Dr. John G. Meachem, Racine, celebrated his fiftieth anniversary of his entrance into the practice of medicine, January 25, in that city, by a reception given at the Guild Hall, for physicians of the city and their wives. Dr. Walter S. Haven acted as toastmaster at the banquet which followed and presented Dr. Meachem with a gold watch as a token of affection.——Dr. George A. Pugh, Kenosha, has recovered $3,000 damages against the United States Express Company on account of the death of Mrs. Pugh, Aug. 27, 1912, which was due to a collision between the automobile in which she was riding and a delivery wagon owned by the express company.——Dr. George Keenan, Madison, is reported to be seriously ill with pneumonia.——Dr. Rudolf F. Teschan, has been elected president, Dr. Louis A. Fuerstenau, secretary, of the board of trustees of the Emergency Hospital, Milwaukee.

CANADA

University News.—The standard of the medical matriculation of the Manitoba Medical College has been raised. Beginning with the session of 1915-1916 all students must have standing equivalent to the first year in the science course in the University of Manitoba. The total number of students enrolled in the present session number 176, the freshmen class being forty, including four women. Owing to the war having called away several of the teaching staff, the following appointments have been necessitated: Lecturer in Róentgen rays and electrotherapeutics, Dr. Walter L. Watt; Dr. Boyd, professor of pathology; Dr. Robert D. Fletcher, lecturer in genito-urinary diseases; Dr. Hugh Mackay, lecturer in dermatology; Dr. T. Herbert Bell, lecturer in clinical ophthalmology; Dr. George W. Fletcher, lecturer in clinical otology and laryngology; Dr. Daniel S. MacKay, lecturer in clinical gynecology; Dr. John D. McQueen, lecturer in materia medica and pharmacy; Dr. Alvin T. Mathers, lecturer on contagious diseases; Dr. James A. Gorrell, demonstrator in anatomy. Dr. John O. Todd has been appointed lecturer in theoretical surgery in place of Dr. B. J. Brandson, resigned; Dr. Ernest S. Moorhead has been appointed lecturer in theoretical medicine in place of Dr. William Chestnut, resigned.

Hospital News.—Chilliwack Hospital (B. C.) has had its accommodation almost doubled by the addition of a new wing.——A new wing four stories high and each story provided with balconies, has just been added to the Regina (Sask.) General Hospital. This will provide amply for the overcrowded older portions of the hospital.——Although the financial stringency has been severely felt in connection with Notre Dame, the Western and the General hospitals, Montreal, it is announced that the Western and Notre Dame will be kept open for some time to come; whilst the General is fortunate in its governors having guaranteed sufficient funds for the work of the hospital for three years.——By the opening of the new wing in connection with St. Luke's Hospital, Ottawa, Ont., increased accommodation has been provided to the extent of twenty in each of two wards.——Two new cottages have been added to the Mowat Memorial Hospital for Tuberculosis, Kingston, Ont.——The St. John County Hospital for Tuberculosis at Little River, N. B., is nearly completed. It consists of a main building and two wings. ——The entire staff of the Vancouver (B. C.) General Hospital has agreed to a reduction of salaries of from 5 to 10 per cent., in order that the board of governors may liquidate the deficit of $11,811.75 reported at the end of October.

Personal.—Dr. James A. Crozier, Port Arthur, Ont., in response to a cable from England advising of his appointment as captain in an English regiment, has left for the front. Dr. Crozier saw service as a surgeon in the South African War.——The militia council of Canada has selected the following doctors to proceed at once to England for service in the Duchess of Connaught's Canadian Red Cross Hospital, established on the Waldorf-Astor Estate, Cliveden: Dr. George O. Taylor, Moncton, N. B.; Dr. R. F. Flegg, Ottawa; Dr. Samuel R. Harrison, Minnedosa, Man. Dr. Charles W. F. Gorrell, Ottawa, is commanding officer of this hospital. ——The following Canadian doctors have been selected in response to a request of the war office for immediate service in the Canadian Base Hospital in England: Captain John P. Walsh, Quebec; Lieut. Keith C. Dean, St. Boniface, Win.; Lieut. R. M. Linton, London, Ont.; Lieut. A. L. Jones, Victoria, B. C.; Lieut. M. V. Valliquette, Ottawa; Capt. Ernest R. Selby, Calgary; Captain Lozier, New Brunswick.——Dr. James A. Montgomery, Deloraine, Man., has joined the British Red Cross for active service.——Dr. William E. Home, Victoria, B. C., having offered his services to the British Admiralty, has left for England.——Dr. John A. McCollum, Toronto, is visiting friends in the Canadian Camp on Salisbury Plain, England.

GENERAL

Tri-State Physicians to Meet.—The annual meeting of the Tri-State Medical Society of the Carolinas and Virginia, will be held in Charleston, S. C., February 17 and 18, under the presidency of Dr. Edward C. Register, Charlotte, N. C.

New Supply Table for Navy.—A new supply table for the medical department of the Navy has recently been issued by the Bureau of Medicine and Surgery. This table is intended as a basis for all requisitions from hospital and store stations, as well as ships of the fleet.

International Health Commission to Move.—The International Health Commission, one of the three divisions of the Rockefeller Foundation, will remove in March from Washington to New York City. The object of the removal is the concentration of the work in one central field.

To Guard Health of Passengers.—The officials of the Pennsylvania Railway have instituted a system for the protection of the health of passengers of the lines. The employees in station restaurants and dining cars of the system, numbering 1,100, are examined by the company's physicians each month. Traveling medical inspectors also examine kitchens, cooking vessels and store rooms, and especial attention is paid to the ventilation of cars.

Eradication of Foot and Mouth Disease.—To January 1 over one hundred thousand animals have been slaughtered on account of foot-and-mouth disease. Of these over forty-six thousand were cattle, forty-seven thousand swine and the remainder sheep and goats. Under the urgent deficiency act passed by Congress and signed by President Wilson, January 25, the sum of $2,500,000 is now available to pay the national government's share of the cost of animals destroyed in eradicating the disease. To January 1 the outbreak had cost the government over two million dollars. One million eight hundred thousand dollars of this represents the government's share of the expense of slaughtering the infected herd and reimbursing owners for their loss, of which the government pays half and the states the remainder.

A Warning.—A subscriber writes that a certain Mr. J. H. Hanaford is soliciting subscribers to a bureau called "American Bureau (or institute) of Medical Research," at Indianapolis. The Journal published a warning concerning this man in September, 1914, after investigation showed that no such institute existed. The purpose of the bureau, the man states, is to receive all medical journals of the world and to make reprints of each individual article, which are kept in stock and sent to subscribers of the bureau on request. The cost of membership is $5 a year. All mail addressed to this bureau is returned. The editor of the *South Texas Medical Record* advises us that this individual has been operating in Texas, naming as sponsors for the bureau of information, Drs. Harvey A. Moore, J. Rilus Eastman and E. E. Wishard of Indianapolis. A letter of inquiry addressed to Dr. Moore brought the reply that he had no knowledge of any such information bureau, but that he had received many letters from different parts of the country asking for information regarding it. Physicians should be careful not to pay money in advance to such doubtful enterprises.

Bequests and Donations.—The following bequests and donations have recently been announced:

Mount Sinai Hospital, New York City, $100,000; St. Luke's Hospital, $25,000; German Hospital, $25,000; New York Eye and Ear Infirmary, $25,000; and Lincoln Hospital and Home, $25,000, by the will of Benjamin Altman.

Seaside Home for Children, New York City, $1,000 by the will of Alexander R. Brewer.

St. Rose Free Home for Incurable Cancer, New York City, $5,000 by the will of Agnes A. Connell.

Washington University, St. Louis, a contingent bequest estimated at more than $1,000,000 for the establishment of an Eye, Ear, Nose and Throat hospital in connection with the institution, by the will of Mrs. William McMillan.

Michael Reese Hospital, Chicago, $1,000 by the will of Simon Yondorf.

Northwestern University Medical School, Chicago, a donation of $27,000 to cover eight full courses, by Mr. James A. Patten, Evanston.

Louisville Anti-Tuberculosis Association, a bequest of $1,000 by the will of Mr. and Mrs. Thurston Ballard for the building, equipping and maintenance of one shack at the Hazelwood Sanatorium.

Hazelwood Sanatorium, $3,310, the net proceeds of the Christmas seal campaign in Louisville.

Philippine Civil Service Examinations.—The United States Civil Service Commission announces an open competitive examination, March 2, for bacteriologists and pathologists, for men only, to fill vacancies in this position in the Bureau of Science at Manila, at salaries ranging from $2,000 to $2,500 a year. Applicants must be citizens of the United States, must hold the degree of M.D. or Ph.D., must have had at least one years' training in bacteriological laboratory work and must have had training in immunity and serum-therapy.——An open competitive examination for specialists in nervous and mental diseases, March 2, for men only, to fill a vacancy of the Civil Service at a salary of $3,500 a year. The applicants must be thirty years of age, must be graduates of a medical college or school of recognized standing and must have had at least two years' experience in hospitals or institutions for the insane.——An open competitive examination is also announced for medical inspector and surgeon. March 2, for men only, to fill a vacancy in this position in the Philippine service at a salary of $3,000 a year. The duties are to take charge of the health station at Manila or in the provinces as the Philippine director of health may require and to attend to such surgical work as may be assigned in the Philippine General Hospital. Applicants must be graduates in medicine from a medical college or school of recognized standing and should have at least three years' experience in surgical hospital practice. Persons who meet the requirements and desire these examinations, should apply at once for forms B. I. A. 2, and 2095, to the United States Civil Service Commission, Washington, D. C., prior to March 2.

FOREIGN

Vital Statistics of Madrid.—From the figures just published for 1914, Madrid, with a population of 614,106, had 27.22 births and 26.48 deaths per 1,000 inhabitants. There has been little change in these proportional figures during the last ten years.

Importation of Meat in Italy Temporarily Suspended.—The *Policlinico* states that as cattle plague, swine plague and trichinosis are prevailing in certain countries, especially in the Orient, the importation of animals or meat from the specified countries has been prohibited by the Italian authorities.

Honors to Town Physician.—The town of Tiero in Italy recently commemorated with a banquet and souvenir volume the fortieth year of service of Dr. A. Cisternino as *medico condotto* of the township. A new public dispensary has been named for him and a set of resolutions on parchment was also presented to the "brave and modest man who," it says, "has exalted *la professione medica* to an *apostolato.*"

Deaths in the Profession Abroad.—J. W. R. Tilanus, professor of surgery at the University of Amsterdam until he retired in 1893, aged 92. He founded in 1851 a medical weekly in Holland and later was on the editorial staff of the *Nederlandsch Tijdschrift v. Geneesk.* until 1886. He was honorary member of a number of foreign scientific associations, including the French Académie de Médecine, whose list of foreign associate members is limited to twenty. His father was professor of surgery at Amsterdam before him and there is still a Tilanus, a surgeon, on the staff of the medical faculty there.——K. von Kraus, at Vienna, aged 78. ——A. Geyl of Delft, aged 61. Since he was compelled by a severe nervous affection to retire from practice in 1899 he has been collecting data for the history of medicine, especially in Holland, and the results of his research are in press.——K. Liebermann, professor of organic chemistry at the University of Berlin, aged 72.——G. Jochmann, in charge of the contagious disease ward of the Virchow Hospital at Berlin, had general supervision of the conditions in regard to hygiene and prophylaxis of epidemics in the camps of prisoners in the vicinity of Berlin. One of the camp physicians, Dr. Hirschfeld, had acquired fatal exanthematous typhus from the prisoners, and Jochmann contracted the disease in tending him. It proved fatal in two weeks. Jochmann's early death at 40 has put an end to a promising career. He had recently published a manual on infectious diseases in addition to other works.——At the death of Dr. C. del Toro of Cadiz, Spain, in December, the city council, in recognition of his services to the town and province, voted a public funeral with honors and monument as if he had been the chief executive, and ordered his portrait placed in the gallery of illustrious sons of Cadiz and his name given to one of the principal streets of the city.

WAR NOTES

Italian Daily Gives Issue to Red Cross.—The entire proceeds of a recent special illustrated number of the *Giornale d'Italia* in Italy were given to the Red Cross.

War Relief Funds.—Up to January 16, $439,646.01 has been subscribed to the American Red Cross; $171,752.87 to the German Relief Fund; $841,645.82 to the Belgian Relief Fund; $304,344.68 to the American Ambulance Hospital; $101,028.81 to the Committee of Mercy Fund, and $103,513.88 to the Prince of Wales Fund.

Medical Corps from McGill.—McGill University has decided to send a fully equipped field hospital as a part of its medical contribution to the aid of the allies in the European War. There will be 21 medical officers, 43 nurses and a total staff of 210 persons and the hospital will have accommodations for 520 patients.

Needs of War Sufferers.—An appeal has been received from Belgium for anesthetics, antityphoid serum and diphtheria antitoxin.——The committee for the relief of Belgian physicians announces that it has arranged to send a large supply of drugs and medicines at once to be distributed among physicians and pharmacists in Belgium.——Georgia and South Carolina have donated a shipload of food stuffs for the Belgians.

McGill Men on Active Service.—The following medical graduates of McGill University are on duty with the Canadian expeditionary force at camps of instruction, or on the staffs of general hospitals in England and on the continent: Lieut.-Col. Kenneth Cameron; Lieut.-Col. Frederick Gault Finley; Majors Charles Fenwick Wylde and Roland Playfair Campbell; Capts. Allan Coats Rankin, Alexander Mackenzie Forbes, George Shanks, George Graham Corbet, St. John, N. B.; James Caryle Fyshe, George A. Stuart Ramsay, Robert B. William, Charles Harold Robson, Theodore Adolph Lober, Arthur Livingstone Johnson and Louis Wellington MacNutt.

Personal.—Col. Henry R. Casgrain, Windsor, Ont., has been appointed head of the new Canadian Hospital now under construction in France. Colonel Casgrain will have under his command, 7 commissioned officers, 45 nurses and 98 non-commissioned officers and privates of the hospital corps.——Dr. Wesley Earle Drennen, Birmingham, Ala., has been placed in charge of the work of the American Ambulance, Paris, during the absence on leave of Dr. Joseph Blake. ——Dr. Samuel L. Ledbetter, Birmingham, Ala., is chief of staff of the Red Cross Base Hospital, near Paris.——Dr. Henry Matthey, Davenport, Ia., is reported to be one of the two surgeons in charge of the military hospital at Castle Holzen, Ebenhausen, near Munich.

The Work of the Red Cross.—From Aug. 1, 1914, to Jan. 8, 1915, the American Red Cross had sent to Europe 45 surgeons and 150 nurses. The English units are in charge of the American Woman's Hospital, Paignton, Devonshire; the French units are in charge of the hospital at Pau, the Russian units are in charge of a hospital at Kiev; the German units are in charge of hospitals at Gleichweitz and Kosel; the Austro-Hungarian units are in charge of hospitals in Vienna and Budapest, and the first unit sent to Servia is in charge of a hospital in Belgrade.——Funds have been transmitted to aid in the maintenance of the American Ambulance, Paris; the American Woman's Hospital at Paignton; the American Red Cross Hospital, Munich; for the hospitals under the charge of the units sent to Germany and Austria and for the work of the American Relief Clearing House, Paris; for the prisoners' bureau of the International Red Cross Committee at Geneva; for the relief of Belgian refugees in Holland; to aid the Netherlands Red Cross; for the British and French hospitals and the American Mission Hospital in Turkey; for the hospital and hospital work in Beirut, and for the American Red Cross Committee at Pekin, China, and for the aid of Austrian and German prisoners in Siberia.——The supplies forwarded include 772,900 pounds of absorbent cotton; 802,400 yards of gauze; 709,000 bandages; 3,168 rolls of adhesive plaster; 13,965 pounds of anesthetics; 77 cases of drugs and medicines; 35 cases of instruments and accessories; 20 United States Army field medical outfits; 7 sterilizers; 20 cases of disinfectants; 15,000 doses of antityphoid serum; 50,000 doses of tetanus antitoxin; 10,000 tubes of small-pox vaccine; 7,500 blankets; 2,211 shawls; 516 coats; 1,740 sweaters for women and children; 10 barrels of alcohol; 2,638 cases of miscellaneous supplies including hospital garments and dressings and clothing for women and children.

Aid for the Belgian Profession.—The committee of American physicians for the aid of the Belgian profession announces that it is constantly receiving heartrending reports regarding the distress of our Belgian colleagues and their families. In February great suffering from severe weather will be added to their other trials. Arrangements have been perfected by which contributions are being promptly converted [illegible] every assurance that they will reach our [illegible] Two hundred boxes of food have been purchased during the week ending January 30.

The treasurer, Dr. F. F. Simpson, announces the following contributions for the week ending January 30:

Drs. C. H. and W. J. Mayo, Rochester, Minn.	
Miss Margaret E. Reed, Chicago, Ill.	$100.00
Dr. E. L. Neff, Pittsburgh, Pa.	1.00
Dr. F. P. Sprague, Boston, Mass.	5.00
Dr. Caspar W. Miller, Wallingford, Pa.	50.00
Dr. John T. Bottomley, Boston, Mass.	50.00
Dr. Henry W. Frauenthal, New York, N. Y.	25.00
Dr. Edwin Sternberger, New York, N. Y.	25.00
Capt. W. A. Powell, M.C., U. S. A., Nogales, Ariz.	10.00
	5.00

Dr. Frederick Fraley, Philadelphia, Pa.		10.00
Dr. George W. Ely, Pittsburgh, Pa.		5.00
Dr. Samuel C. Plummer, Chicago, Ill.		5.00
Dr. R. W. Hodges, Baltic, Mich.		10.00
Dr. Ellen A. Stone, Providence R. I.		10.00
Dr. Charles A. Elsberg, New York, N. Y.		25.00
Dr. F. M. Hicks, San Antonio, Tex.		10.00
Dr. Marion Marsh, Worcester, Mass.		2.00
Ohio Valley Academy of Medicine, Bellevue, Pa.		25.00
Dr. M. P. Messinger, Oakfield, N. Y.		2.00
Total		$375.00
Previously reported receipts		$1,791.00
Grand total		$2,166.00
Previously reported disbursements	$1,650.00	
Disbursements week ending January 30	440.00	
Total disbursements		2,090.00
Balance		$76.00

F. F. Simpson, M.D., Treasurer,
Jenkins Arcade Bldg., Pittsburgh, Pa.

PARIS LETTER

Paris, Jan. 14, 1915.

The War

THE IMPROVEMENT OF THE MILITARY HEALTH SERVICE

The minister of war has just decided to create a special commission to investigate the service of military hygiene with a view to making all possible improvements. This commission is composed of eighteen members whose technical knowledge and previous experience are a guarantee of the results. The medical profession is represented by Professor Landouzy, dean of the Faculté de médecine de Paris, Dr. Léon Labbé, senator, Dr. Roux, director of the Pasteur Institute, Dr. Vaillard, medical inspector general of the military health service, Drs. Hartmann and Delbet, professors of clinical surgery at the Faculté de médecine de Paris, and Dr. Troussaint, director of the war department health service.

HEART AFFECTIONS IN THE ARMY

At one of the last sessions of the Académie de médecine, Dr. C. Fiessinger pointed out that men with heart affections (myocarditis, paroxysmal tachycardia, mitral insufficiency or stenosis or aortic insufficiency) can undergo considerable fatigue if sustained by a rational treatment with digitalis. Thus a soldier dismissed at the age of 21 for aortic insufficiency returned as an aviator in the middle of August and is still continuing to do aerial reconnoitering. A military surgeon affected with mitral stenosis, made prisoner in Lorraine, returned to the Aisne as soon as he came back to France and passed fatiguing days and nights which caused a dilatation of the heart. He refused the necessary rest and rejoined his post at the end of forty-eight hours. In a previous letter (The Journal, Jan. 9, 1915, p. 163) I mentioned a series of cases reported by Dr. Aubertin in which men aged from 20 to 30 years went through a campaign without bad results although they were affected with aortic insufficiency.

SECONDARY HEMORRHAGES FROM WOUNDS IN WAR

Dr. Hardouin, substitute professor of pathology and clinical and obstetric surgery at the Ecole de médecine de Rennes, read an interesting paper on this subject before the Société de chirurgie de Paris which completed the discussion recently reported in The Journal (Jan. 9, 1915, p. 163). To judge by about twenty cases of secondary hemorrhage which he had the opportunity to observe since the beginning of the war, such hemorrhages seem to take place in wounded men who arrive at the hospital deeply infected, from four to eight days after the wound and after a fatiguing journey of three or four days. Most frequently they are caused by lesions of important vessels. In other cases the hemorrhage may be an indefinitely recurring general oozing. No matter to which of these classes the secondary hemorrhage belongs, immediate operation is necessary. Tamponing ought not to be used in any case. The seat of the hemorrhage should be opened up and the two ends of the artery in the wound or in its immediate neighborhood should be tied. High ligature of the principal artery has the disadvantage of being sometimes insufficient and also of endangering the vitality of the limb more than lower ligature. Therefore it should be used only when it is impossible to find and to ligate the vessel near the wound. In the relatively rare cases of generalized hemorrhage, the best treatment is drainage from the lowest part of the wound preventing all stagnation of the septic liquid, reopening of the wound, abrasion of the bleeding tissues and tamponing.

PRIVATE PRACTICE AND THE MILITARY SERVICE OF CIVILIAN PHYSICIANS

The necessities of war have caused a great number of civilian physicians to be drafted into the medical reserve corps. The attention of the minister of war has been called to the fact that many young civilian physicians are stationed in hospitals or military camps in the same city where they live and practice their profession in times of peace. These physicians continue to carry on their private practice while their colleagues, often much older, are called on for service in the army or in distant parts of the country. Not only is this situation unjust; it also does not always permit the drafted physician, especially when his service is at one of the military camps, to detach himself from local demands, and to preserve the professional independence indispensable to military physicians. Consequently the minister of war has decided that in the future physicians of the reserve shall be, as a rule, stationed at some distance from their residence. Physicians who, though released by age from military obligation, are serving voluntarily, may, on the other hand, be stationed in the place where they ordinarily practice if their services are required by the population. In no case shall local physicians be employed in the army camps.

In response to a request expressed by several of those affected by the rule, physicians filling an elective civil office (members of parliament or of general councils) are not to be stationed in the department from which they are elected.

The Campaign Against Alcoholism

August 16 last, the minister of the interior instructed prefects to forbid the sale of absinthe and similar drinks in their respective departments (The Journal, Sept. 19, 1914, p. 1044). The president of the republic has just signed a decree making permanent this prohibition, which up to the present was limited to the duration of the war.

Another decree has just been signed forbidding the granting of any new license for the sale of intoxicating liquors except those having a basis of wine and titrating less than 23 degrees. Unfortunately this measure is not so radical as it should be, for it contains a clause stating that later decrees will define the exceptions to this rule. It is to be feared that after the war political influences will open the door to numerous abuses which will be labeled "exceptional cases."

It is to be noted that in our country there is a license for each thirty adults. This average is considerably exceeded in certain departments. Thus, the proportion rises to one license for each twenty-two adults in the Seine-Inférieure and to one for each fifteen adults in the department of the Nord and one for each eleven in the Eure. Several years ago the plans of the government comprised the limitation of the number of licenses to one for each 500 inhabitants. Even a ratio of one license to each 200 inhabitants would mean the existence of about 200,000 licenses. At present there are nearly 500,000. Refusal to grant any new licenses is consequently merely the minimum of what is required in the new campaign against alcoholism. No exceptions should be tolerated.

Death of Dr. Suchard

Dr. Eugène Suchard, former substitute professor at the Collège de France, has just died, aged 62. He was born at Mulhouse on the Upper Rhine and after a brilliant course at the Faculté de médecine de Paris, he passed many years attached to the laboratory of Professor Potain at the Charité Hospital. Then for more than twenty years he brilliantly filled the place of Professor Ranvier in the chair of general anatomy at the Collège de France.

BERLIN LETTER

Berlin, Jan. 5, 1915.

Personal

Prof. J. Rosenthal, formerly director of the physiologic institute at Erlangen, died January 2 at the age of 78. He was a pupil of DuBois-Reymond and became his assistant immediately after taking the state examination. In this position, he joined the faculty in 1862, was made professor extraordinary in 1867, and in 1872 received a call as regular professor to Erlangen, where he spent the rest of his life. His work lay chiefly in the field in which his teacher was a pioneer. He published a general physiology of the muscles and nerves and, together with Professor Bernhardt, a treatise on medical electricity for physicians. Other works treat of the respiratory movements and their relation to the vagus nerve, heat regulation in warm-blooded animals, public and private hygiene, etc.

The Number of Students in Berlin

In spite of the fact that 1,501 men and 27 women among the Berlin students are in the service of the army, either in the field or in subsidiary positions, such as nursing and the like, the number of students in the winter semester at the university is not particularly smaller than usual. Eight thousand and thirty-five students have matriculated, 7,037 men and 898 women. The number of the latter has relatively largely increased. In the previous winter semester there were only 859 women while the men students numbered 8,200. Of medical students there are 1,798 men and 199 women.

The War

ORTHOPEDIC INSTITUTIONS AND THE CARE OF THE WOUNDED

Attention to the after-treatment of the wounded has already begun with great zeal. All the German cripple hospitals, of which there are more than one hundred, have expressed their readiness to receive the wounded who are in need of orthopedic after-treatment or apparatus and artificial limbs. A large organization is being established for the treatment and future employment of crippled soldiers.

WAR OPERATIONS OF THE IMPERIAL INSURANCE

The president of the Imperial Insurance Office made an address recently giving in general an account of the work which the imperial insurance organization has so far devoted to the tasks of the war. All hospitals, convalescent homes, and lung sanatoriums have been prepared for the reception of the wounded. The insurance societies have offered to devote to the purposes of the war as much as 5 per cent. of their means. As this amounts to about $500,000,000 (2 billion marks), a sum of more than $25,000,000 is available. Of this, about $375,000 have been given to the Red Cross, and more than $250,000 to the committee for providing woolen underclothing for the troops. All those unmarried German sailors who are without work have been assured a home and care free of cost on a large steamship. The sums which have been appropriated for the survivors of those who have fallen have already reached $500,000. An appropriation of $375,000 has been made for the purpose of preventing the lapse of the right to insurance on account of the non-payment of dues by the insured who are in the field. An amount up to $50,000,000 will be loaned out on easy terms to needy communities, societies, etc. The insurance societies have subscribed $37,500,000 for the war loan—a slight evidence that the $1,125,000,000 subscribed to the war loan will be quickly forthcoming.

EXHIBITION SHOWING THE CARE OF THE WOUNDED AND SICK IN WAR

For the instruction of the public regarding the measures which are being taken for the care of the wounded and sick in the war, an exposition was opened in the parliament buildings, under the auspices of representatives of the civil and military medical authorities. All that is being done by the state and by voluntary effort for the care and restoration to health of the wounded and sick soldiers is on exhibition, beginning with the prevention of sickness and the first aid to the wounded on the battlefield, and extending to the convalescent soldier in his home country. The exposition is divided into groups: The first group illustrates the sanitary arrangements for the army in the field. Here one sees the first aid package, closed and open, of which every soldier carries two sewed into his coat, and which are intended for the first care of the wound by the wounded man himself or by a comrade; also the set of articles to be carried in the pocket, the set for the whole troop, the cavalry case and pocket case of bandage material, an instrument case for the hospital, a field Roentgen car, models of hospital tents and barracks. How the business of caring for the wounded is arranged is shown from a large relief map of a battlefield. One sees the medical forces lying on the abdomen under fire, bandaging the wounded and then, still in the field of battle, the sanitary squads, the transportation of the wounded, the work at the temporary dressing station, the gathering places, and the field and base hospitals. How the wounded are transported in motor buses, carts and hospital trains is illustrated by plain models.

The second group depicts the medical work in the navy. For the narrow, steep and crooked passages of a ship, other means of transportation are needed than on land. The best is a transport hammock, shown at the exposition, by which the steep, stairs may be avoided by use of rails. The chief attraction of this department is the hospital room of a battleship in its natural size. The bandage rooms are placed in a lower part of the ship, protected as much as possible from the fire of the enemy, and have modern surgical apparatus. The operation table has a special arrangement to keep it steady. Furthermore, the genuine hospital ship with movable beds adapted to the movements of the ship, the so-called swinging berth, is shown. To this the wounded are transferred after the battle. In addition to the space for the sick, there is also an operation room and a drug room, which serves, at the same time, as a clinical and bacteriologic laboratory.

A further group exhibits the means for combating infectious diseases in war, giving pictures and cultures of the various bacteria, showing the method of obtaining serum, tables with regard to the results of vaccination, arrangements for disinfection, a flying laboratory, as well as tables and charts illustrating the spread of and campaign against tuberculosis.

The other departments of the exposition are devoted to the application of the Roentgen rays in the care of the wounded, the work of the dentist in war, the technic of nursing in all its details, and the methods for occupying and amusing the sick, and the organization of nursing in war. In this last department is an exposition of the work of the order of the Knights of St. John and of Malta, and there is also a beautiful model of the Mount of Olives Foundation at Jerusalem which was established under the protection of the order of the knights of St. John (Johanniter).

The department showing the provisions for those crippled in the war illustrates by pictures and models how, with proper care and training, a relatively large number of those who have been maimed can be rendered more or less self-supporting. For example, it is shown that a man who has lost both feet and hands is yet capable of dressing and washing himself without help, eating, writing and working at a lathe in a turner shop. One fine specimen of mechanical work was exhibited done by a man whose right hand had been lost. Other models illustrate the instruction of a cripple in a trade. The historical department of the exhibition gives an interesting view of the historical development of medical military service.

Marriages

William Richard Janeway, M.D., New Brighton, Staten Island, N. Y., to Miss Carol Rodman of Ridgewood Road, N. J., January 20.

George Stanford Hensyl, M.D., to Miss Helen Bacon, both of Mahanoy City, Pa., at Mt. Carmel, Pa., January 19.

John Roy Westaby, M.D., Clark, S. Dak., to Miss Marcia Blanch Eldred of North Pownal, Vt., Dec. 17, 1914.

Charles August Riemcke, M.D., North Yakima, Wash., to Miss Lois Steen of Spokane, Wash., Dec. 30, 1914.

Maurice Jacob Greenstein, M.D., Bridgeport, Conn., to Miss Hattie Singer of New York City, January 17.

Isadore Emanuel Freed, M.D., Greensburg, Pa., to Miss Diana Zeldenrust of Allentown, Pa., January 19.

David Alfred Angus, M.D., to Miss Mabel Meuli, both of Rosalia, Wash., at Spokane, Wash., January 15.

Frederick William Manning, M.D., Windsor, Ont., to Miss Florence Pfeiffer of Detroit, January 11.

Arthur Augustus Rang, M.D., Washington, Ind., to Miss Gladys H. Halter of Garrett, Ind., January 12.

Thomas Madison Morgan, M.D., Wesson, Ark., to Miss Ella Combes of El Dorado, Ark., January 19.

Paul J. Landry, M.D., New Iberia, La., to Miss Willie Walters of Vicksburg, Miss., in April, 1914.

Henry Shillingford Miles, M.D., to Miss Edith Alicia Zink, both of Bridgeport, Conn., January 9.

Dudley Steele Conley, M.D., New York City, to Miss Sidney Ann Boales of St. Louis, January 2.

Henry B. Esmond, M.D., St. Albans, Vt., to Mrs. Martha J. Herrin of Upper Alton, Ill., January 22.

James Laurence Sullivan, M.D., to Miss Anna J. Sadler, both of Bridgeport, Conn., January 18.

Orril Le Grand Suggett, M.D., St. Louis, to Miss Virginia Parker of Lexington, Ky., January 21.

Hendery Allison, M.D., to Miss Clara Lucille McLoud, both of Kingsville, Tex., January 8.

Deaths

James Morrison Bodine, M.D., noted for his work in medical education in the South; died in the apartment of his nephew in the Atherton Building, Louisville, January 25, from senile debility, aged 83. He was born in Fairfield, Ky., Oct. 2, 1831. His early education was received at St. Joseph's College, Kentucky, and Hanover College, Indiana, and his medical course was taken in the Kentucky School of Medicine, Louisville, from which he graduated in 1854. Two years later he became demonstrator of anatomy and later professor of anatomy in his Alma Mater. He entered the faculty of the University of Louisville in 1866 as professor of anatomy, serving in that capacity for forty-five years. He was dean of the university from 1867 to 1907, and was made president of the faculty in 1907. He was a Fellow of the American Medical Association and for many years served as a member of the Louisville Board of Health. From 1881 to 1886 Dr. Bodine was president of the American Medical College Association. After his retirement from the presidency of the University of Louisville, in 1910, the alumni of the institution and medical friends from twenty states gave a testimonial banquet in his honor. The death of Dr. Bodine marks the passing of one of the old-time medical gentlemen of the South.

William Grant Moore, M.D. Jefferson Medical College, 1875; a Fellow of the American Medical Association, and third vice-president in 1910-1911; formerly president of the Missouri State Medical Association; one of the founders of and professor of theory and practice of medicine and clinical medicine in the Marion Sims-Beaumont College of Medicine, St. Louis; a member of the staff of the St. Louis Protestant and St. Ann's hospitals, and the Missouri Baptist Sanitarium and physician in charge of St. John's Hospital, St. Louis; died at his home in that city, January 28, from pneumonia, aged 61.

Samuel Augustus Fisk, M.D. Harvard Medical School, 1880; a Fellow of the American Medical Association; professor of practice of medicine in the University of Denver from 1884 to 1899; secretary of the faculty for many years and dean for four years; once president of the American Climatological Association; a member of the first board of the Home for Consumptives, Denver, and a member of the staff of St. Luke's and Deaconess hospitals; died at his home in Boston, January 18, aged 58.

Joseph Eve Allen, M.D. Medical College of Georgia, Augusta, 1877; a Fellow of the American Medical Association; dean and professor of obstetrics in his Alma Mater; president of the Augusta Academy of Medicine in 1894 and 1896; for several years a member of the Augusta Board of Health; consulting obstetrician to the Augusta City Hospital and the Lamar Hospital; one of the most prominent obstetricians and gynecologists of the South; died at his home in Augusta, January 19, aged 57.

Levi Francis Warner, M.D. College of Physicians and Surgeons in the City of New York, 1889; a Fellow of the American Medical Association; attending physician to St. Francis' Hospital and physician-in-chief to the New York Dispensary; medical examiner for the Municipal Civil Service Commission and a member of the Board of Police Surgeons of New York City for eight years; died in St. Luke's Hospital, January 20, after a surgical operation, aged 50.

Alonzo Byron Hughes, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1897; a member of the Iowa State Medical Society; for twelve years a member and since 1909 president of the Keokuk Board of Education; formerly professor of chemistry in his Alma Mater and prior to that time, school principal and professor of chemistry in Nebraska schools; one of the most prominent citizens of Keokuk; died at his home, January 16, from diabetes, aged 58.

Ira A. Cottingham, M.D. Eclectic Medical Institute, Cincinnati, 1885; St. Louis College of Physicians and Surgeons, 1890; of Carthage, Mo.; a member of the Missouri State Medical Association; for twenty-four years a practitioner of Aurora, Mo., and for three terms mayor of that city, and local surgeon for the railways centering in Aurora; died in the Carthage Hospital, January 19, from meningitis due to an infection of the middle ear, aged 55.

George Clayton Feigel, M.D. Syracuse University College of Medicine, Syracuse, N. Y., 1898; a member of the Medical Society of the State of New York; visiting physician to St. Joseph's Hospital, Syracuse; who disappeared from his home in Syracuse ten days before, despondent on account of ill health; was found dead in a hotel in Chicago, January 24, from the effects of poison self-administered, it is believed, with suicidal intent, aged 45.

Charles A. E. Lesage, M.D. Northwestern University Medical School, Chicago, 1897; a Fellow of the American Medical Association; once president of the Dixon Medical Association and secretary of the Lee County Medical Society, and a specialist on diseases of the eye, ear, nose and throat, of Dixon, Ill.; a member of the staff of the Dixon Public Hospital; died at his home in that city, January 22, aged 42.

Benjamin Sharp, M.D. University of Pennsylvania, Philadelphia, 1880; later professor of invertebrate zoology at the Academy of Natural Sciences, Philadelphia, and two years later professor of zoology in his Alma Mater; zoologist of Commander Peary's first Arctic expedition in 1901; a scientist of national repute; formerly of Brookline and Nantucket, Mass.; died in Beaufort, N. C., January 15, aged 56.

Adam Monroe Kalbach, M.D. Long Island College Hospital, Brooklyn, 1867; Bellevue Hospital Medical College, 1868; a member of the Medical Society of the State of Pennsylvania, who gave up practice thirty years ago to conduct extensive lumber enterprises in Maryland; died at his home in Lancaster, Pa., January 20, from heart disease, aged 69.

Dabney Minor Trice, M.D. Hospital College of Medicine, Louisville, Ky., 1890; assistant physician to Long Island State Hospital from 1903 to 1908; president and resident physician of Moore's Brook Sanitarium, near Charlottesville, Va.; a member of the Medical Society of Virginia and a prominent specialist on diseases of the nervous system; died January 17, from pneumonia, aged 54.

Ralph Walsh, M.D. University of Georgetown, Washington, D. C., 1863; a Fellow of the American Medical Association and for many years a practitioner of Washington, D. C.; for thirty-five years connected with the National Vaccine and Antitoxin Laboratory; died at his home in Jerusalem, Md., January 15, from paralysis, aged 73.

Albert James Browne, M.D. Berkshire Medical College, Pittsfield, Mass., 1865; a member of the Medical Society of the State of New York; for several terms supervisor of the town of Newton; in 1895 and 1896 health officer of Utica; died at his home in Utica, January 23, from pernicious anemia, aged 74.

James Boone Lincoln, M.D. Jefferson Medical College, 1883; a member of the Medical Association of the State of Pennsylvania; for twenty-three years physician for the relief department of the Pennsylvania Railroad; died at his home in Lancaster, Pa., January 17, from cerebral hemorrhage, aged 56.

John Wesley Gray, M.D. Jefferson Medical College, 1864; Bellevue Hospital Medical College, 1867; a member of the Indiana State Medical Association; surgeon in the United States Indian Service from 1885 to 1888; died at his home in Bloomfield, Ind., January 25, from heart disease, aged 75.

Charles T. Montgomery, M.D. Albany (N. Y.) Medical College, 1874; a member of the Medical Society of the State of New York and one of the best-known practitioners of Ulster County; died at his home in Saugerties, N. Y., January 15, from arteriosclerosis, aged 65.

Lloyd L. Edgell, M.D. Starling Medical College, Columbus, Ohio, 1885; a member of the West Virginia State Medical Association; for several years a practitioner of Keyser, W. Va.; died at his home in Cumberland, Md., January 18, from heart disease, aged 55.

Isaac Shelby Warren, M.D. Kentucky School of Medicine, Louisville, 1870; health officer of Somerset, Ky.; a member of the Kentucky State Medical Association; died in the Somerset Sanitarium, January 15, following an operation for malignant disease, aged 59.

John Adam Person, M.D. Jefferson Medical College, 1888; a Fellow of the American Medical Association and a member of the staff of Nesbitt West Side Hospital, Wilkes-Barre, Pa.; died at his home in Wilkes-Barre, January 19, from diabetes, aged 53.

William Waldo Knowlton, M.D. Hahnemann Medical College, Philadelphia, 1893; of Camden, N. J.; a member of the Medical Society of the State of New Jersey; a specialist in dermatology; died in Philadelphia, January 23, aged 43.

Montague J. Jones, M.D. Medical College of Ohio, Cincinnati, 1871; for several years a practitioner of Peoria; died at his home in Chicago, January 27, aged 74.

Davis Bruce Richards, M.D. Jefferson Medical College, 1896; also a graduate in pharmacy in 1891; a Fellow of the American Medical Association; died at his home in Philadelphia, January 21, from nephritis, aged 47.

Louis P. Pollmann, M.D. Missouri Medical College, St. Louis, 1870; a Fellow of the American Medical Association and for forty-four years a surgeon of St. Louis; died at his home in that city, January 23, aged 64.

Claude Dearborn Warren, M.D. Baylor University, Dallas, Tex., 1905; a member of the State Medical Association of Texas; died at his home in Houston, Nov. 9, 1914, from tuberculosis, aged 31.

John Buchanan Dewar, M.D. Bellevue Hospital Medical College, 1888; a member of the Michigan State Medical Society; died at his home in Cedar Springs, Mich., about January 20, aged 61.

Albert W. Squires, M.D. Columbus (Ohio) Medical College, 1883; a member of the Ohio State Medical Association; died at his home in White Cottage, Ohio, January 15, from pneumonia, aged 61.

John Adolphus McEachern, M.D. University of Louisville, Ky., 1889; a member of the Medical Association of the State of Alabama; died at his home in Brundidge, Ala., January 5, from heart disease.

David W. Beattie, M.D. University of Nebraska, Omaha, 1897; local surgeon at Neligh (Neb.) for the Northwestern System; died at his home in Neligh, January 8, from arteriosclerosis, aged 55.

John W. Cobb, M.D. Albany (N. Y.) Medical College, 1858; a surgeon of volunteers during the Civil War; died at his home in Binghamton, N. Y., January 14, from pneumonia, aged 76.

Henry Russell Lowe, M.D. Dartmouth Medical School, Hanover, N. H., 1883; a member of the Connecticut State Medical Society; died at his home in Putnam, Conn., Nov. 1, 1914, aged 65.

Wiley Thomas Simpson, M.D. Medical College of Georgia, Augusta, 1883; a member of the Medical Association of Georgia; died at his home in Smithville, Ga., January 8, aged 62.

John E. Barrette, M.D. State University of Iowa, College of Homeopathic Medicine, Iowa City, 1886; of Lawrence, Neb.; died in a sanatorium at Lincoln, Neb., about January 10.

James T. Hard, M.D. Albany (N. Y.) Medical College, 1877; resident physician of the Mary M. Packer Hospital, Sunbury, Pa.; died at his home January 12, from erysipelas, aged 65.

Charles Richard Dewey, M.D. University of Michigan, Ann Arbor, 1886; formerly of Olivet, Mich., but recently a practitioner of Lansing; died at his home in Olivet, January 13, aged 56.

P. C. Woodruff, M.D. Louisville (Ky.) Medical College, 1888; a member of the Oklahoma State Medical Association; died recently at his home in Stilwell, Okla., aged 49.

John Damascus Bambenek, M.D. Northwestern University Medical School, Chicago, 1908; died at his home in that city about January 7, from pneumonia, aged 33.

Adelbert Allen Bryson, M.D. Bellevue Hospital Medical College, 1892; died at his home in Dorchester, Boston, about January 15, from heart disease, aged 54.

Erazmus Z. F. Golden, Jr., M.D. Birmingham (Ala.) Medical College, 1912; died at his home in Langdale, Ala., December 24, from acute gastritis, aged 26.

John D. Baker, M.D. American University of Pennsylvania (Eclectic), Philadelphia, 1880; died suddenly at his home in Eshcol, Pa., January 12, aged 71.

William F. Cook, M.D. Hahnemann Medical College, Philadelphia, 1899; died at his home in Port Allegany, Pa., January 3, aged 44.

Charles Edward Anderson, M.D. Trinity Medical College, Toronto, 1908; died at his home in Brooks' Station, Alta., about January 10.

Vincenzo Delpiano (license, Connecticut, 1898) was shot and killed at his home in Norwalk, Conn., by his brother-in-law, January 6.

Henry Clark Bradford, M.D. Bellevue Hospital Medical College, 1893; died at his home in New York City, January 10, aged 50.

Association News

THE SAN FRANCISCO SESSION

Special Trains from Chicago and New York

Arrangements are being made for special trains from Chicago to San Francisco over three different routes. These trains will be designated, the American Medical Scenic Route Special, the American Medical Grand Canyon Route Special, and the American Medical Direct Route Special.

THE AMERICAN MEDICAL SCENIC ROUTE SPECIAL

This train will go over the Chicago, Burlington and Quincy Railroad from Chicago to Denver, and the Denver and Rio Grande, Denver to San Francisco. The party is to be personally conducted. The train will be made up of modern equipment, observation Pullman sleeper, drawing room standard sleepers, dining car and baggage car.

SCHEDULE

Lv. Chicago	9:45 a. m.	June 15
Ar. Denver	1:00 p. m.	June 16
Lv. Denver	Before 12 p. m.	June 16
Ar. Colorado Springs	4:00 a. m.	June 17
Lv. Colorado Springs	4:00 a. m.	June 18
Ar. Glenwood	3:30 p. m.	June 18
Lv. Glenwood	6:30 p. m.	June 18
Ar. Salt Lake	8:30 a. m.	June 19
Lv. Salt Lake	12:00 Noon	June 19
Ar. San Francisco	5:00 p. m.	June 20

Starting from Chicago at 9:45 a. m., June 15, this train traverses the prairie sections of Illinois, crosses the Mississippi at Burlington and during the afternoon goes through the corn belt of Iowa, crossing the Missouri River at Council Bluffs and Omaha. During the night it travels through Nebraska, reaching McCook in the early morning and arriving at Denver at 1 p. m., June 16. Here a stop will be made during the afternoon and evening which will provide an opportunity for sightseeing, and arrangements can be made with the "Seeing Denver Company" to take the party for a ride through the parks and avenues of the "Queen City of the Plains."

Leaving Denver before midnight, June 16, over the Denver and Rio Grande the train is due to arrive at Colorado Springs (75 miles south of Denver) at 4 a. m., June 17. The train is to be parked directly outside the grounds of the Antlers Hotel. Here a number of side trips may be made into the Pike's Peak region by carriage, automobile, etc., to the Garden of the Gods (time for the round trip about two hours; street car fare 20 cents); to Monument Park (about the same time; street car fare 20 cents); across the Mesa to Palmer Park and return, via the Boulevard (about three hours, $1); to Stratton Park (5 miles, street car fare 20 cents); North and South Cheyenne canyons and the Famous Seven Falls (about four hours, street car fare 20 cents, admission 50 cents); the "High Drive," thence down through Bear Creek Canyon and Colorado City, back to Colorado Springs (half a day's trip); to Crystal Park by automobile from either Colorado Springs or Manitou (about four hours, $3). From Manitou, trips can be made to the Cave of the Winds (admission $1); to the Cliff Dwellers ruins (car fare 10 cents, admission $1); incline up Mt. Manitou (street car fare to incline 10 cents, trip $1); Ute Pass and Temple Drive (may be made on foot, 3 miles; two hours' time should be allowed). A party may be made up to start early in the morning for Pike's Peak by way of the cog wheel road. (Pike's Peak, height 14,147 feet. The round trip requires four hours and the fare is $5). The party may return to Manitou and have time to go to the Cripple Creek gold mining district via the "Short Line"—"the one way trip that bankrupts the English language" (cost of trip, $3). For parties of 100 or more, a special train, special schedule, and in some instances, special rates, may be arranged for the trip up Pike's Peak, the Cripple Creek district and some others of the foregoing list. Special accommodations for some of the other trips may be arranged for smaller parties.

Leaving Colorado Springs at 4 a. m., June 18, the train enters the Royal Gorge about 7:30 a. m. The scenery is almost beyond conception in grandeur. Between sheer walls of granite half a mile high and but 30 feet apart, the train passes to the hanging bridge, and then for hours the road goes through mountain scenery, the grandeur of which is beyond description. The Continental Divide is crossed through Tennessee Pass (altitude 10,240 feet) where streams start both for the Pacific and the Atlantic.

The train is due to arrive at Glenwood Springs at 3:30 p. m., June 18. Here a stop is planned permitting a swim in the open air hot swimming pool (750 feet long, with a depth of from 4 to 6 feet), a unique attraction. Dinner may be obtained at the Hotel Colorado. Leaving at 6:30 p. m., the Palisades are passed at Grand Junction, and the Great Grand River Valley fruit section is entered before dark.

Salt Lake City is reached at 8:30 a. m., June 19. The many fine buildings erected by the Mormons are of interest not only because of the durability of their construction, but also on account of their unique style of architecture. "Sightseeing automobiles" permit travelers in a short time to see the most interesting points in the city. Salt Lake, 70 miles long by 30 wide, and with an average depth of 10 feet, is 4,000 feet above the sea level. On its shore is Saltair Beach, which is 13 miles due west from Salt Lake City and is reached by a thirty-minute railway ride.

Salt Lake City is left at 12 noon, June 19, by the Western Pacific Railway. During the night, the train will cross the salt beds of the Salt Lake desert basin. The salt, in places, is 12 feet thick and almost 98 per cent. pure. The following morning the train will be in the sage country, a region almost virgin in character. Soon the foothills of the Sierras appear in the distance. The beauty of the scenery increases as the summit of this range is approached at Beckwith. The train enters along the rock walls of the Feather River Canyon, a 90 mile long gorge, where the rails are laid on a shelf chiseled from the solid rock along the side of the canyon. Alternate views of the river, meadow, glen and valley present themselves until the train arrives at Oroville, at the western end of the canyon. This is said to be the center of the largest gold dredging district in the world. Then the road passes down the western slope of the Sierra Nevadas into the Sacramento Valley through the capital city of California and the center of the great fruit growing industry of that section, crosses the northern portion of the Rich San Joaquin Valley and spans the little valleys of Livermore, Pleasanton and Niles, and passing through Oakland, arrives at San Francisco at 5 p. m., Sunday, June 20.

It will be noted that the entire trip—through the mountains, the Royal Gorge, across the Continental Divide, through Glenwood Springs, past Grand Junction and through the Feather River Canyon—is made in daylight, and that the party arrives in San Francisco in the early evening.

NEW YORK AND NEW ENGLAND SPECIAL

This train will be under the management of McCann's Tours. The itinerary is planned to provide a fast schedule, over an interesting route for the outward trip, leaving eastern points as late as the afternoon and evening of June 16 and getting to San Francisco on Sunday evening, June 20. The return trip will be made in a leisurely manner over an interesting scenic route, including a trip from San Francisco to Portland by way of the Shasta line. Stops will be made at Portland, Seattle and Spokane, and a five day trip through the Glacier National Park is planned. The itinerary, as has been noted, contemplates leaving New York at 2 p. m., June 16, over the New York Central lines, thence by way of the Chicago, Milwaukee and St. Paul, the Union Pacific and the Southern Pacific to San Francisco, where the party will stop from Monday, June 21 to Friday, June 25, leaving San Francisco at 8 p. m. on the last-named day. From Wednesday, June 30, to Sunday, July 4, the party will be in Glacier National Park, returning to New York on Thursday, July 8.

Those who do not have time or are not disposed to return by the route indicated, may arrange to take the special train to San Francisco and to return within three months after the date of starting, by any authorized route selected.

A description of other special trains will appear in future numbers of The Journal.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

TRI-IODIDES, THREE CHLORIDES AND MAIZO-LITHIUM

Report of the Council on Pharmacy and Chemistry

As an illustration of unreliability of claims and unscientific character of proprietary mixtures, the Council has authorized publication of the following reports on Tri-Iodides, Three Chlorides and Maizo-Lithium, products of the Henry Pharmacal Co. (J. F. Ballard, proprietor).

W. A. Puckner, Secretary.

Tri-Iodides (Henry)

Tri-Iodides (Henry Pharmacal Co., St. Louis) is a nostrum whose ingredients apparently were selected at random. Since the effects of such a mixture cannot be predicted, no thoughtful physician would think of prescribing in any one condition all the drugs named in the formula of Tri-Iodides—if he had to write out the prescription. Yet because the misleading name of the preparation gives it the semblance of a therapeutic entity—and because it is advertised in medical journals—a certain number of physicians thoughtlessly prescribe this shotgun mixture.

LABORATORY REPORT

Regarding the composition of "Tri-Iodides" the Association's Chemical Laboratory makes the following report:

> A trade package of Henry's Tri-Iodides purchased in 1910 bore the following formula on the label:
>
> "Colchicin, 1-20 grain,
> "Phytolaccin, 1-10 grain,
> "Solanin, 1-3 grain,
> "Sodium Salicylate, C. P., 10 grains,
> "Iodic Acid, (equal to 7/32 gr. of Iodine) in two fluid drachms of Aromatic Cordial."
>
> In the circular which was wrapped with the bottle the wording of the formula differs somewhat from the foregoing, "iodic acid" of the label being replaced by "hydro-iodic acid." While the label on the bottle named "phytolaccin" as one of the constituents the label on the carton which contained the bottle gave "decandrin." The following formula appears on a trade package purchased June, 1914:
>
> "Colchicine, 1-200 Grain,
> "Phytolacca, 1 1-5 Grain,
> "Mydriatic Alkaloids, 1-500 Grain,
> "Sodium Salicylate, 3 1-2 Grain.
> "Iodic Acid (equal to 7-125 Grain of Iodine) in two fluid drachms."
>
> The differences between the formulas are striking. Colchicin has been reduced from $^1/_{20}$ grain to $^1/_{200}$ grain; sodium salicylate from 10 grains to 3½ grains; iodin (claimed to be present as iodic acid) from 7/32 grain to 7/125 grain. "Phytolaccin" ("Decandrin") has been replaced by "Phytolocca" and "Solanin" by "Mydriatic Alkaloids." While the formula for the preparation has been changed, the circular accompanying the package still refers to "solanin" (in some parts of the circular wrongly spelled "salonin") and "phytolaccin." As no principle having the characteristic effects of poke-root is known to have been isolated the terms "decandrin" and "phytolaccin" are meaningless.
>
> The circular states that solanin is an alkaloid obtained from the sprouts of *Solanum tuberosum*, but wrongly calls this plant "bittersweet" instead of potato. At the market price the amount of solanin claimed, according to the old formula, to be present in a bottle of Tri-Iodides, would cost $1.60, although a bottle of the preparation sold at wholesale for 67 cents.

Tri-Iodides is a dark brown, mobile liquid having a faint clove-like odor and a mawkish, sweet taste. Salicylate was found in considerable amounts. Traces of alkaloids were found, a portion of which appeared to be colchicin. Iodic acid and its salts were absent, although claimed by the formula to be present. Potassium iodid was present. Determinations of the iodin by distillation with ferric ammonium sulphate solution and sulphuric acid indicated the presence of about 1.68 gm. of iodin (equivalent to 2.18 gm. of potassium iodid) in each 100 c.c. of the preparation. This is equivalent to about 7.65 grains of iodin per fluidounce, or more than thirty-four times the amount claimed by the formula on the bottle. An approximate determination of the salicylic acid by extraction of the acidified preparation with ether and evaporation of the solvent indicated about 2.67 gm. in 100 c.c., equivalent to 3.09 gm. of sodium salicylate, or about 14.11 grains per fluidounce. Since the amount of sodium salicylate claimed is 3.5 grains in 2 fluidrams or 14 grains in each fluidounce, the amount found agrees essentially with the claims.

ABSURD CLAIMS

It should be unnecessary, after pointing out the conflict between the name and the published formula, between the formula and the actual composition, and between the composition and all established therapy, to discuss this heterogeneous and unscientific mixture further. A few specimen absurdities, however may be quoted from the advertising "literature:"

". . . Free of the Disagreeable Effects of the Alkaline Iodides."

[Tri-Iodides, according to the laboratory report, depends for its iodin action on potassium iodid.]

". . . we have an assimilable form of vegetable hydriodates.

"The hydriodates of these valuable vegetable alkaloids afford the specific alterative action of iodine without such disagreeable results as the iodism produced by the ordinary iodides."

["The hydriodates" is an obsolete term formerly applied to iodids of vegetable alkaloids. Iodids of vegetable alkaloids, if present at all in Tri-Iodides, are present in negligible amounts.]

"Containing Iodine in an available form, it is obvious that the formula must be beneficial in the majority of syphilitic skin lesions."

The falsity of the first two of these claims and the mischievousness of the last are self-evident.

It would be possible, but is unnecessary, to produce an almost unlimited amount of evidence to show the transparent character of the deception by which this preparation is exploited.

The referee feels that the nostrum will have been sufficiently characterized when he has mentioned further that the name "Henry's Tri-Iodides" is blown in the glass of the bottle, that the label contains the recommendation "For Gout, Rheumatism and other Diathetic Diseases," and that the circular accompanying the bottle recommends the use not only of Tri-Iodides, but also of Three Chlorides, Maizo-Lithium, Campho-Phenique and Satyria in the treatment of many diseases.

Three Chlorides (Henry)

Three Chlorides (Henry) is advertised as:

"An oxygen-carrying ferruginous preparation, suitable for prolonged treatment of children, adults and the aged. Indicated in anemia and convalescence from acute diseases and surgical operations."

The following report on the composition of Three Chlorides is submitted by the Association's Chemical Laboratory:

LABORATORY REPORT

It is claimed that each fluidram of Henry's Three Chlorides contains:

"Mercuric Bichlorid	1-72 Gr.
"Arsenic Chloride	1-40 Gr.
"Proto-Chloride Iron	2-25 Gr.

". . . in a cordial of Calisaya Alkaloids."

The preparation is a pale yellow, clear solution having an odor of alcohol. The addition of potassium ferricyanid solution does not produce any blue coloration, thus demonstrating the absence of ferrous chlorid (iron protochlorid). Instead potassium ferrocyanid solution produces at once an intense blue precipitate and potassium sulphocyanate solution an intense red coloration, thus proving the presence of iron in the ferric condition. It is obvious that the claimed superiority of Three Chlorides over preparations containing ferric iron is absurd. Since it contains iron in the ferric condition, Three Chlorides decomposes soluble iodids with the liberation of free iodin. The assertion that it is a suitable "vehicle" for the administration of iodids is likely to lead the physician unwittingly to administer free iodin.

As the laboratory report shows, the "formula" of Three Chlorides (Henry) is incorrect for proto-chlorid of iron (ferrous chlorid) was absent from the preparation. There is, however, a more serious objection to the formula than the misstatement of fact. When the physician is dealing with conditions that call for mercury, arsenic or iron, it is irrational and unscientific to prescribe a preparation containing these three drugs in fixed proportions.

OBJECTIONABLE ADVERTISING

Three Chlorides is marketed in bottles having the name "Three Chlorides" blown in the glass, in a carton containing a circular extolling the curative powers of this and other proprietaries of the same concern. Thus a physician who prescribes Three Chlorides is likely to place in the hands of his patient the advice that

"Three Chlorides . . . is suitable for the prolonged treatment of children . . ."

"In tertiary syphilis, with or without potassium iodide, it holds first rank among remedies directed against the specific taint . . ."

Further, that "Maizo-Lithium" is:

"A Genito-Urinary Sedative" and a "remarkable uric-acid solvent."

Also that "Satyria" is:

"An Ideal Genito Tonic and Nerve Reconstituent."

"Indicated in Prostatic trouble, Cystitis, Urethritis, Gonorrhea, Gleet, Leucorrhea, Sexual Debility and Impotence."

We are told that

"As a hematinic, the protochloride of iron justifies the confidence of the medical profession."

"The protochloride, more than any other salt of iron, stimulates the paptic [*sic*] and hydrochloric glandular system of the stomach, increasing the flow of acid gastric juice."

It is unnecessary to discuss the truth or falsity of these assertions, since Three Chlorides does not contain the protochlorid of iron. For the same reason, it is obvious that the small amount of iron which it contains is the only possible justification for the claim that the preparation is

". . . Non-Productive of . . . Constipation or Teeth Discoloration."

It is hardly necessary to point out that it is a therapeutic exaggeration to claim that Three Chlorides is of particular value in the treatment of tertiary syphilis, that in eczema it is "the most effective remedy," that in any form of constipation it is "the remedy par excellence," or that

"After arresting malarial attacks with quinine, the combination of iron, arsenic and mercury with calisaya is an essential requisite."

"Whenever gastric troubles and digestive disturbances furnish a contra-indication to iron, this contra-indication disappears when the iron is combined with arsenic."

"The simultaneous exhibition of small doses of arsenic and bichloride of mercury, besides augmenting the effect of iron upon the red blood-cells, completely obviates the tendency to vascular congestion and hemorrhage."

Finally, the suggestion that by the use of Three Chlorides iodids may be prevented from causing iodism is absurd.

In short, whatever may be the advisability of prescribing iron, arsenic or mercury in any given case, it is irrational to prescribe them in fixed proportions. A physician who is induced by the exaggerated advertising claims to prescribe these drugs in a proprietary mixture, under a non-informative name, does grave injustice to his patients.

Maizo-Lithium

Maizo-Lithium (Henry Pharmacal Co., St. Louis) is one of the many proprietary lithium preparations based on the disproved theory that lithium dissolves uric acid deposits in the body. The label on a trade package states that:

> "Maizo-Lithium promptly facilitates the elimination of the uric and phosphatic deposits from the system."

As might be expected, the promoter of Maizo-Lithium ascribes a long list of ills to "uric and phosphatic deposits," and argues that, therefore, Maizo-Lithium is the proper treatment:

> "In lithemia, hematuria, incipient diabetes, cystitis, urethritis, pyelitis and ALL inflamed conditions requiring a non-irritating diuretic."

"Inflamed conditions" naturally, include almost all of the real or imaginary ills of kidney, bladder, etc.

Maizo-Lithium is distinguished from its congeners chiefly by the claim that it contains a mythical or problematical compound, maizenate of lithium.

LABORATORY REPORT

The following report on the composition of Maizo-Lithium has been submitted by the Chemical Laboratory of the American Medical Association:

> The promoter of Maizo-Lithium makes the following statement upon the label concerning the composition of the preparation:
>
> "Each fluid drachm contains two grains maizenate of lithium."
>
> The following is also found in a circular which is enclosed with the trade package of Maizo-Lithium:
>
> "Maizo-Lithium, the remarkable uric acid solvent, is a nascent chemic union of maizenic acid, obtained from green corn silk, with the alkaline base lithium forming maizenate lithium, of which the mother liquid carries two grains to each drachm."
>
> Standard works on organic chemistry and pharmacology, such as Beilstein's Organische Chemie and Cushny's Pharmacology and Therapeutics, do not mention maizenic acid. Neither is it mentioned in comprehensive bibliographies of phyto-chemical investigations such as Huseman-Hilger's Die Pflanzenstoffe or Wehmer's Die Pflanzenstoffe. The first to use the term appears to have been a Dr. Vautier (*Arch. méd. belg.*), but his publication is not available to the laboratory. Rademacher and Fischer (*Amer. Jour. Pharm.*, 1886, lviii, 369) claim to have isolated the substance from green corn-silk, but the record of their work is unsatisfactory and indefinite and therefore their results could not be verified; it seems unlikely, however, that they isolated a pure proximate principle.
>
> Examination of Maizo-Lithium demonstrated the absence of bromids, chlorids, phosphates, sulphates, acetates, benzoates, salicylates and tartrates—combinations in which lithium might be expected to be present. The presence of a citrate, however, was shown by the usual tests. Lithium and sodium were present. Free acid was absent. Determination of lithium citrate and of sodium citrate indicated the presence of a total of about 3.7 gm. of these two salts in each 100 c.c. of the preparation, or about 2.1 grains in each fluidram. About 25 per cent. of the total salts appeared to be lithium citrate. The examination, therefore, does not demonstrate the presence of "maizenate of lithium," but does show that Maizo-Lithium contains a mixture of lithium citrate and sodium citrate. Tests for citric acid and citrates were made on a commercial specimen of fluidextract of corn-silk. The results were negative, although the preparation had an acid reaction to litmus. The presence of maizenate of lithium in Maizo-Lithium—in fact, its actual existence—thus failed of demonstration. In view of this fact, it was felt that the burden of proof rested on the promoter of Maizo-Lithium to supply some satisfactory evidence with regard to this substance. The following letter was, therefore, sent to James F. Ballard:
>
> "According to the label on a recently purchased bottle of Maizo-Lithium, each fluidram of this preparation contains 2 grains of 'maizenate of lithium.' From an examination made in this laboratory we are inclined to conclude that this statement is not in accordance with the facts. A search of chemical and pharmaceutical publications does not reveal that such a compound as 'maizenate of lithium' has ever been isolated and described and we are very much inclined to question its existence. We should be pleased to receive from you any evidence which you may care to send in substantiation of your claim in regard to the content of 'maizenate of lithium' in Maizo-Lithium—particularly a specimen of 'maizenate of lithium' or the method by which it is produced."
>
> While this letter was sent Oct. 13, 1914, no evidence has been submitted up to date (January, 1915) to substantiate the asserted presence of maizenate of lithium in Maizo-Lithium.

The report just given shows that the manufacturer has found it expedient to surround his worthless nostrum with a cloak of mystery. A discussion of the jumble of uncritical claims, baseless assertions and evident falsehoods presented in favor of Maizo-Lithium would seem a waste of time when the secrecy of this nostrum is all-sufficient for its condemnation.

[Editorial Note.—When the Council on Pharmacy and Chemistry was started we announced that we did not see any clear line of demarcation between "patent medicines" and many so-called "ethical proprietaries." Time has not caused us to change our opinion. As we have already shown, and as we shall have occasion to show in the future, not a few of the "ethical proprietaries" offered to physicians are being advertised by those who are pushing the rankest of "patent medicines." The three preparations mentioned above are sold—and presumably manufactured—by Mr. Ballard, of St. Louis. Mr. Ballard is the promoter of Ballard's Snow Liniment, Brown's Iron Bitters, Herbine, Dr. Herrick's Vegetable Liver Pills, Swaim's Panacea, Renne's Pain Killing Oil, etc. He is also the promoter of Campho-Phenique, exposed in The Journal some eight years ago.[1] The spectacle is not an edifying one. A manufacturer with one hand offers the public a profusion of cure-alls, while with the other he endeavors to foist on the medical profession preparations which are just as fraudulent. Some day our profession will awake to the disgrace of it all. It will also awake to the fact, which should have been evident ere this, that the nostrum business would cease if physicians would refuse to accept into their offices, even as a gift, the nostrum-promoting medical journals that live off this trade. Fraudulent "patent medicines" will continue to thrive just so long as newspapers will publish "patent medicine" advertisements; fraudulent "ethical proprietaries" will continue to exist just so long as medical journals will advertise such proprietaries. As the better class of newspapers are rejecting "patent medicine" advertising on their own volition, so are the better class of medical journals rejecting advertisements of fraudulent proprietaries. Some newspapers will continue to carry nostrum advertising until their subscribers raise a protest that will cause the business department to take notice; so, too, some medical journals will continue to share the profits with the nostrum exploiters until an outraged medical profession repudiates such publications.]

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[1] The Journal A. M. A., April 20, 1907, reprinted in "Propaganda for Reform," 8th Edition.

Milk Sugar and Charcoal in a Case of Mercurial Poisoning.—A young woman with chronic nephritis took mercuric chlorid with suicidal intent, but recovered. The treatment was with 100 gm. of lactose a day, supplemented by vegetable charcoal, which was given by the tablespoonful every two hours and by an enema twice a day. No food was allowed but milk, and water was given freely. The tendency to anuria was transiently relieved by wet-cupping, but when the anuria became complete, A. Lamas, who reports the case in *Medicina Contemporanea*, 1914, xxxii, 406, made an intravenous injection of 700 c.c. of a 25 per cent. solution of sugar. He injected the whole amount in fifteen minutes, regarding haste as a factor in the result. Urine was voided at once and repeatedly during the following hour, to a total of 1.1 liter.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DOAN'S KIDNEY PILLS AND SOME SHOTGUN PRESCRIPTIONS

To the Editor:—1. Please state the formula of Doan's Kidney Pills. 2. Please comment on the following prescriptions:

℞ STOMACH AND NERVE TONIC TABLETS

Carica papaya (papain)	1 gr.
Strychnin phosphate	1/64 gr.
Willow charcoal	2 gr.
Ext. eucalyptus	1/4 gr.
Ext. hydrastis	1/8 gr.
Celery seed	1/4 gr.
Ipecac po	1/8 gr.

Sig.: For an adult, 1 or 2 tablets before or after meals as directed.

℞ LIVER AND BOWEL REGULATORS

Ext. chionanthus	1/2 gr.
Podophyllin	1/6 gr.
Po. ipecac	1/4 gr.
Cascarin	1/4 gr.
Aloin	1/4 gr.
Ext. hyoscyamus	1/8 gr.
Ext. nux vomica	1/8 gr.

Sig.: For an adult, 1 or 2 on retiring as directed.

J. H. LOWE, M.D., Mentor, Ohio.

ANSWER.—1. According to "Secret Remedies" (first edition), published by the British Medical Association, analysis of Doan's Backache Kidney Pills "showed them to contain oil of juniper and (in spite of their 'purely vegetable' nature) potassium nitrate, together with a considerable proportion of a resinous substance, and of powdered fenugreek seeds and wheat and maize starches." According to the same authority, the following formula gave a similar pill:

Oil of juniper	1 drop
Hemlock pitch	10 gr.
Potassium nitrate	5 gr.
Powdered fenugreek	17 gr.
Wheat flour	4 gr.
Corn starch	2 gr.

In twenty pills.

In "Nostrums and Quackery" (second edition) a comparison is made of the British and American labels of Doan's Pills. Attention also is directed to one of the Doan's Kidney Pills' newspaper advertisements of the testimonial type. It is shown that the individual whose name appeared in the testimonial died of nephritis two months before the testimonial was published! An article reprinted in the "Propaganda for Reform Department" of THE JOURNAL, Nov. 7, 1914, gives the reply of a weekly magazine to the arguments made by the representative of the Doan's Kidney Pills concern.

2. The most striking characteristic of the prescriptions given is their polypharmacy, the collection of a large number of ingredients in one pill. Some of these may be adapted to a certain condition, but it is quite doubtful if a condition can be found in which all of them would be of service. The question of chemical incompatibility does not apply in such a mixture, so that we are chiefly concerned with the therapeutic value of the ingredients. Papain, obtained from carica papaya (papain), is a vegetable product having some of the properties of pepsin, but of a very uncertain and feeble digestive power. Willow charcoal is a remedy often prescribed on the theory that it will absorb a large quantity of gas from the stomach. This assumption is not well founded, as the charcoal, when wet, has a very slight power of absorbing gases. Extract of eucalyptus is given as an antiseptic, but the value of antiseptics in the stomach is very problematic. In the first place, in most conditions, there is no fermentation in the stomach. The gas which is found in many cases is not the result of fermentation, but consists of swallowed air. Second, antiseptics can seldom be given in sufficient doses to arrest fermentation in the stomach when it actually occurs, as in cases of stasis. In these cases the only efficient remedy is to restore the motor power of the stomach so that it can empty itself.

Extract of hydrastis is a remedy which was formerly recommended for a supposed effect on the mucous membranes. Excepting the possible value of hydrastis as a bitter, there is little reason to believe that it is of any service in gastro-intestinal diseases. To secure its effect as a bitter, if it has any, it is necessary to give it in solution. Given as here, in the form of a pill or tablet, it is worthless.

Celery seed is a substance reputed to have value as a nerve tonic. The action of this substance is practically unknown. If it has any value it must be very small. We are unable to suggest the condition for which the powdered ipecac of this prescription is intended.

In the second prescription, like the first, the number of ingredients is excessive. Chemical incompatibilities may be disregarded, as the preparation is in the form of tablets or pills. Of the ingredients, the extract of chionanthus is a little used medicine of very indefinite properties, believed to be an alterative, a convenient but indefinite term, and also believed to have what is equally indefinite, a favorable effect on the liver. The other ingredients of this pill may be said to be synergistic, given for their effect on the intestines, especially for the relief of constipation. It may be said that this pill compares favorably with some of the venerable combinations, such as the compound cathartic pill and other polypharmacal combinations of the Pharmacopeia.

With reference to the first prescription, it is difficult to say what purpose it is intended for, and it would be equally difficult for the physician who should administer it, to determine which of its ingredients was the effective agent.

MARRIAGE OF THE TUBERCULOUS

To the Editor:—I should like to inquire as to the chances of the development of tuberculosis in patients, especially women, who have been discharged as "cured" after a course of sanatorium treatment and who afterward marry. By cured I mean patients that have been free from moisture for some time and who only show a certain amount of dulness and increased vocal fremitus over the site of the old lesion. Would you ever consider marriage advisable in such cases and would the occurrence of pregnancy mean very great risk in lighting up an old focus? I am compelled to deal with these things and would like an opinion on them. If this is published, kindly do not mention my name.

C. C. M.

ANSWER.—Patients who have recovered to the extent indicated by the correspondent should be advised that they take a considerable risk in marrying. In general it is not held that women strongly predisposed to tuberculosis should marry. The actual risk of marriage without pregnancy is not very great. If pregnancy occurs, there is danger of the lighting up of an old focus. Some authors, however, report experiences with pregnancy in tuberculosis which indicate no very great influence of the tuberculosis on the pregnancy, or vice versa. These, however, should be regarded as exceptional.

THE TEACHING OF REFRACTION BY CORRESPONDENCE

To the Editor:—I wish to take a course in refraction, and am unable to get away from my practice to do so. Is there not an institution where this is competently taught by correspondence? It seems to me I have seen such an advertisement somewhere, and I am writing to inquire if you can advise me of the address, if there is such a place.

H. L. G.

ANSWER.—The theoretical studies that underlie practical refraction work, such as physiologic optics, can be carried on by correspondence, and a knowledge of the elements of refraction can be acquired from books, just as one may, in theory, study other kinds of physical diagnosis. The practical application of these elements cannot, however, be learned except in a properly equipped "refraction room" with living patients and under the supervision of an expert. Effective refraction work involves the intelligent use of the skiascope, ophthalmoscope, phorometer, ophthalmometer, trial case and other devices that cannot be taught by mail, any more than can the use of the stethoscope or the laryngoscope. Prescribing for asthenopic and ametropic patients (apart from jewelry-store efforts) is not that simple procedure one is sometimes led to believe, while six months or a year in a hospital or a medical school is none too long a period to study this important form of therapeutics.

DOSAGE OF EMETIN IN PYORRHEA

To the Editor:—Will you kindly state the dosage and intervals between injections in the emetin treatment of pyorrhea alveolaris?

E. J. S.

ANSWER.—Emetin hydrochlorid is given in pyorrhea alveolaris in doses of from 1/2 grain to 1 grain at intervals of from one to two days. It is claimed that from three to six doses are necessary, and in some cases it may be necessary to repeat this course at the end of ten days.

Miscellany

Requirements of the Harrison Law

As previously stated,[1] the Harrison bill, which has been before Congress for the last two years, became a law, Dec. 17, 1914. Official copies of the law and the regulations for its enforcement have been issued by the Commissioner of Internal Revenue. While the provisions of the bill were discussed at length during its consideration in Congress, so many modifications took place that a general summary of the law as finally enacted seems advisable.

THE SECTIONS

Section 1 provides that on and after the first day of March, 1915, every person who produces, imports, manufactures, compounds, deals in, dispenses, sells, distributes or gives away opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof shall register, with the collector of internal revenue of the district, his name and place of business, the office of a physician, or residence in the absence of an office, being considered the place of business. At the time of registration and on the first day of July annually thereafter, each person who performs any of the acts covered by the bill must pay to the district collector of internal revenue a special tax of one dollar per annum. Officers of the United States government lawfully engaged in purchasing such drugs, or officers of any state, county or municipality purchasing drugs for public hospitals, are exempt.

Section 2 provides that it shall be unlawful for any person to sell, barter, exchange or give away any of the specified drugs except in pursuance of a written order from the person to whom the drugs are sold or given, which order must be on a form issued in blank by the Commissioner of Internal Revenue. These orders must be made out in duplicate, one copy to be written by the person ordering the drugs and the other by the person filling the order, and both copies must be accessible to the revenue officer for a period of two years. The following acts are exempt: The dispensing or distribution of any of these drugs to a patient by a physician, dentist or veterinary surgeon, registered under this act, in the course of his professional practice only, provided the person dispensing shall keep a record of all such drugs for a period of two years. The filling of a prescription written by a physician, dentist or veterinary surgeon, registered under the act, is also exempt. Such prescriptions must be dated and signed by the physician and must be preserved by the druggist for a period of two years. The various forms and blanks required shall be furnished by the Commissioner of Internal Revenue at a price not to exceed one dollar per hundred.

Section 3 provides that any registered person shall on request of the collector of the district render a sworn statement of the quantity of the prescribed drugs received by him during the past three months and the names of the persons from whom they were received.

Section 4 forbids interstate commerce in these drugs, except by a registered person, common carriers being exempt.

Section 5 provides that all records shall be open to the inspection of the officers of the Treasury Department or officers of any state or territory or municipality charged with regulating the traffic in the specified drugs. Certified copies of returns can be secured from the collector of internal revenue by state or municipal officers. The disclosing of information except for the enforcement of the act is forbidden.

Section 6 provides that the act shall not apply to the sale, distribution, giving away, dispensing or possession of preparations which do not contain more than 2 grains of opium or more than ¼ grain of morphin or more than ⅛ grain of heroin or more than 1 grain of codein or any salt or derivative of them in 1 fluidounce, or if a solid or semisolid preparation, in 1 avoirdupois ounce, or to liniments, ointments or other preparations prepared for external use only, except those which contain cocain or any of its salts or alpha or beta eucain. Decocainized coca leaves or other preparations of coca leaves which do not contain cocain are also exempt.

Section 7 provides for the extension of all internal revenue laws so as to make them applicable to this act.

Section 8 provides that no person not registered under the provisions of this act shall have in his possession or under his control any of the specified drugs, such possession or control to be presumptive evidence of the violation of this act. Employees of registered persons, nurses under the supervision of physicians, dentists or veterinary surgeons registered under this act or the possession of drugs in accordance with a prescription of a physician registered under the act are exempt.

Section 9 provides a penalty of a maximum fine of $2,000, imprisonment of not more than five years or both for violations of the law. Section 10 authorizes the Commissioner of Internal Revenue to appoint necessary persons to enforce the law. Section 11 appropriates $150,000 for carrying it out, and Sections 12 provides that this act shall not amend or repeal the previous laws on this subject.

THE REGULATIONS

The regulations are somewhat more illuminating, as they form the application of the law to specific conditions. The registration fee for the period remaining from March 1, 1915, to July 1, 1915, is prorated at 34 cents, remittance to be made in currency, money order or certified check. Application for registration blanks should be made to the collector of the district. Each application will be given a registry number which will be permanent and which will be entered on all blank orders issued to the applicant. All applications will be recorded alphabetically by classes, and coupon stamps to the amount of the special tax required will be furnished by the collector. Orders for any of the specified drugs must be made on the prescribed form, supplied by the collector of internal revenue bearing the registry number and signature of the person ordering the drugs. All orders must be in duplicate, the duplicate retained by the maker and the original by the person filling the order, and both copies must be kept on file for two years in such a way as to be readily accessible to the inspecting officers. A written order is not required for the dispensing or distribution of any of the specified drugs to a patient by a physician registered under this act in the course of his professional practice, but a record of drugs so dispensed must be kept by each physician in a suitable blank book to be provided by the physician, the records showing the date, the kind and quantity of drugs dispended and name and residence of the patient to whom the drugs were given. Prescriptions must be dated and signed on the day issued, and must contain the name of the physician and the name of the person for whom the prescription is filled. Druggists are required to file such prescriptions separately or else to keep a separate record of such prescriptions, showing the file number in each case. In addition to the signature of the physician, the prescription must state the registry number, the location of the office of the physician and the name and address of the person for whom such prescriptions are written. Druggists are required to refuse to fill prescriptions that are not so signed, or any prescriptions that they have reason to suspect were fraudulently issued. The dispensing of such drugs by druggists, except in accordance with the physician's original prescription, is forbidden. Refilling of prescriptions containing habit-forming drugs is therefore prohibited under this law. Each person dispensing these drugs directly to consumers is required on the first day of March, 1915, to prepare and keep on file an inventory of all such drugs on hand at that time.

Copies of the law, and the regulations with an appendix giving the collection districts and the address of the collectors of internal revenue for each district, can be obtained from the Commissioner of Internal Revenue at Washington or from the collectors of the various districts. The pamphlet is Internal Revenue Regulations, No. 35, dated Jan. 15, 1915.

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[1] Congress Passes Antinarcotic Bill, Current Comment, The Journal A. M. A., Dec. 19, 1914, p. 2234. Harrison Bill Becomes a Law, Miscellany, Dec. 26, 1914, p. 2306.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CONNECTICUT: New Haven, March 8-9. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic; New Haven, March 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic: New Haven, March 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

KANSAS: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lebanon.

MAINE: Portland, March 9-10. Sec., Dr. F. W. Searle, 776 Congress Street.

MASSACHUSETTS: Boston, March 9-11. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

California July Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at San Francisco, July 14-17, 1914. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 56, including 7 osteopaths, of whom 33 passed, including 1 osteopath and 1 drugless practitioner; 23 failed, including 6 osteopaths. Sixty-seven candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Medical Evangelists	(1914)	88.8
College of Phys. and Surgs., San Francisco	(1914)	77
Hahnemann Medical College of the Pacific (1913) 80.8;	(1914)	78
Leland Stanford Junior University (1914) 76.3, 82.1, 82.7, 84.7, 85.4, 86.1, 90.1.		
University of California (1914) 86.5, 87.9, 88.2, 88.5, 88.7, 88.7, 90.1.		
University of Colorado	(1914)	81.5
Chicago College of Med. and Surg.	(1914)	81.9
Johns Hopkins University	(1913)	81.4
Harvard University	(1914)	82.1
College of Phys. and Surgs. in the City of N. Y. (1912) 82.9;	(1902)	75.4
Columbia University	(1913)	75.9
Cornell University	(1910)	83.8
University and Bellevue Hospital Medical College	(1913)	83.4
University of Oregon	(1914)	85.8
Medico-Chirurgical College of Philadelphia	(1914)	88.5
University College of Medicine, Richmond	(1899)	93
Royal College of Physicians and Surgeons, Ireland	(1908)	75.5
FAILED		
alifornia Eclectic Medical College (1913) 64;	(1914)	70.3
ollege of Medical Evangelists	(1914)	72.4
llege of Phys. and Surgs., Los Angeles (1914) 69.5, 70.1, 73.5.		
llege of Phys. and Surgs., San Francisco	(1914)	68.7
per Medical College (1903) 60;	(1907)	65.9
nemann Medical College of the Pacific	(1913)	63.3, 73.1
nd Stanford Junior University	(1914)	73.1
er and Gross College of Medicine	(1908)	67.3
cal College of Indiana	(1902)	69.7
cky School of Medicine	(1907)	48.3
nes Medical College (1906) 68.8;	(1911)	73.8

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
College of Phys. and Surgs., San Francisco	(1907)	Washington
University of Colorado	(1912)	Colorado
Georgetown University	(1908)	Dist. Colum.
American Med. Missionary Coll., Chicago (1899) Illinois; (1903) Wisconsin.		
Chicago College of Med. and Surg. (1907) Nebraska; (1912) (1913) Illinois.		
Chicago Homeopathic Medical College	(1900)	Illinois
Hahnem. Med. Coll. & Hosp., Chicago (1903) Iowa;	(1910)	Illinois
Hering Medical College	(1904)	Illinois
Northwestern University	(1909) (1911)	Illinois
Rush Medical College (1884) Minnesota; (1900) (1910) (1913) Illinois; (1910) Arizona.		
University of Illinois	(1911)	Illinois
Central College of Physicians and Surgeons	(1894)	Indiana
Indiana University	(1910)	Indiana
Medical College of Indiana (1889) Indiana;	(1902)	Utah
State University of Iowa, Coll. of Med.	(1910) (1912)	Iowa
Kentucky School of Medicine	(1897)	Washington
Louisville and Hospital Med. Coll.	(1908)	Illinois
Louisville Medical College	(1879)	Nebraska
Tulane University of Louisiana	(1910)	Louisiana
Medical School of Maine (1896) Maine;	(1911)	New York
Baltimore Medical College (1904) Illinois;	(1905)	R. Island
Johns Hopkins University	(1908)	Penna.
Maryland Medical College	(1911)	Virginia
University of Maryland (1883) Colorado;	(1892)	Penna.
Harvard University	(1910)	Maryland
Detroit College of Medicine	(1903)	Michigan
Barnes Medical College	(1910)	Missouri
Homeopathic Medical College of Missouri	(1907)	Missouri
Kansas City Homeopathic Medical College	(1894)	Kansas
Marion-Sims College of Medicine	(1897)	Wisconsin
St. Louis University	(1913)	Missouri
University Medical College, Kansas City	(1900)	Idaho
University of Missouri (1875) Colorado;	(1909)	Missouri
Washington University	(1911)	Missouri
John A. Creighton Medical College (1901) Iowa;	(1904)	Nebraska
Albany Medical College	(1875)	New York
Bellevue Hospital Medical College	(1887)	Tennessee
College of Phys. and Surgs. in the City of N. Y.	(1872)	New York
New York Homeo. Medical Coll. and Flower Hosp.	(1904)	New York
Cleveland Medical College, Homeopathic	(1892)	Ohio
Eclectic Medical College, Cincinnati (1904) Arkansas;	(1913)	Ohio
Medical College of Ohio	(1905)	Ohio
Jefferson Medical College	(1891)	Penna.
University of Pennsylvania (1910) Virginia;	(1911)	New York
Meharry Medical College	(1912)	Tennessee
University of Tennessee	(1891)	Kansas
McGill University	(1898)	N. Dakota
University of Leipzig	(1892)	New York
Royal University of Naples, Italy	(1903)	Nevada

South Dakota July Report

Dr. Park B. Jenkins, secretary of the South Dakota State Board of Health and Medical Examiners, reports the practical and written examination held at Deadwood, July 14-16, 1914. The total number of subjects examined in was 15; total number of questions asked, 115; percentage required to pass, 75. The total number of candidates examined was 20, of whom 18 passed and 2 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Bennett Medical College	(1913)	79
Chicago College of Med. and Surg. (1912) 94.7;	(1913)	77.5
College of Phys. and Surgs., Chicago (1910) 83;	(1912)	86.1, 87.7, 90.8
Northwestern University	(1911)	88.8
Rush Medical College (1910) 86.1; (1912) 89.9;	(1913)	87.8
Medical College of Indiana	(1902)	75.5
University of Michigan, Dept. of Med. and Surg. (1906) 86.2; (1910) 89.1; (1912) 92.8; (1914) 90.5.		
St. Louis University	(1904)	83.3
McGill University, Toronto	(1896)	83.4
FAILED		
Atlanta College of Phys. and Surgs.	(1909)	56.5
American College of Med. and Surg.	(1906)	71.5

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Kentucky University	(1904)	Kansas
University of Minnesota	(1901)	Minnesota

Massachusetts July Report

Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, July 14-16, 1914. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 165, of whom 117 passed, including 15 non-graduates and 5 osteopaths, and 48 failed, including 19 non-graduates, 10 osteopaths and 1 chiropractic. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgetown University (1913) 80.5;	(1914)	79.6
Chicago College of Medicine and Surgery (1912) 75; (1913) 75; (1914) 79, 79.1.		
State Univ. of Iowa, Coll. of Homeo. Med. (1912) 77.9;	(1913)	79.7
Medical School of Maine	(1914)	75
Eastern University School of Medicine*	(1913)	76.1
Johns Hopkins University	(1914)	80.5
Maryland Medical College	(1913)	75, 75
University of Maryland	(1914)	75.2, 82
Boston University (1913) 77.5; (1914) 75, 75.9, 76.5, 77.1, 77.2, 77.2, 78.5, 79, 80.8, 81, 81.7, 81.7, 82.2.		
College of Physicians and Surgeons, Boston	(1912)	75
Harvard University (1890) 80; (1912) 80; (1914) 76.1, 76.4, 77.2, 77.7, 77.7, 78.5, 80, 80.2, 81.5, 82.1, 82.2, 82.7, 82.8.		
Tufts College Medical School (1911) 75; (1912) 75.4, 79.7; (1913) 75, 75.8, 79, 79.3, 81.5, 81.8; (1914) 75, 75, 75, 75, 75.3, 75.8, 76,		

76.2, 76.5, 76.5, 76.7, 77, 77.5, 77.5, 78, 78.1, 78.2, 78.2, 78.2, 78.2, 78.5, 78.6, 78.7, 78.9, 79.2, 79.3, 79.4, 79.7, 80.4, 80.8, 81.7.		
Albany Medical College	(1913)	78.5, 79.3
University of Michigan, Dept. of Med. and Surg.	(1901)	75.8
Jefferson Medical College	(1914)	75.1, 80
Medico-Chirurgical College of Philadelphia	(1914)	75
Temple University	(1914)	82.2
University of Vermont	(1912) 79.9; (1914)	78
Dalhousie University	(1914)	75.9
Royal University of Naples	(1911)	75
Royal University of Rome	(1905)	79.5
Non-graduates 75, 75, 75, 75, 75.5, 75.5, 75.5, 75.7, 75.7, 76.8, 76.8, 77, 77.5, 78, 78.5.		

FAILED

College of Physicians and Surgeons, San Francisco	(1913)	67.5†
University of Louisville	(1912)	68.7, 72.6
College of Physicians and Surgeons, Baltimore	(1914)	63‡
Maryland Medical College	(1912) 60.5; (1913)	58.1, 66
College of Physicians and Surgeons, Boston	(1908) 62.5; (1910) 64.7; (1911) 65.2; (1913)	63.4, 69.1, 72.4.
Tufts College Medical School	(1913) 71.7; (1914)	66.4
University and Bellevue Hospital Medical College	(1913)	72.8
Medico-Chirurgical College of Philadelphia	(1914)	71.2
National University of Athens	(1898)	46.2
Non-graduates, 36.2, 36.9, 47.5, 51.9, 55.2, 61.9, 62, 64, 65.7, 66, 67, 68.5, 69, 70.2, 70.2, 71.8, 72, 72.1, 72.2.		

* Officially reported as not recognized by the Maryland State Board of Medical Examiners.

† Official information from the college states this candidate is not a graduate.

‡ Examination not completed.

Book Notices

The Nervous System and Its Conservation. By Percy Goldthwait Stiles, Instructor in Physiology in Harvard University. Cloth. Price, $1.25 net. Pp. 229, with illustrations. Philadelphia: W. B. Saunders Company, 1914.

This book consists of twenty-three brief chapters, as follows: Introduction. The minute structure of the nervous tissues. The elements of nerve physiology. Reflexes. The general anatomy of the nervous system. The afferent part of the nervous system. The neuromuscular mechanism. The neuromuscular system: neuromuscular fatigue. The autonomic nervous system. The cerebrum. The cerebrum and human development. The cerebrum and the life of the individual. Emotion. Sleep. Dreams. Causes of nervous impairment. Neurasthenia. Some matters of general hygiene. The author states that "if this volume is not to be an impertinence it must be justified by the attempt made to combine some elements of the anatomy, physiology and hygiene of the nervous system." He has succeeded in giving a clear and interesting account of the main facts and principles involved, and while in his modesty he does not address himself to the medical profession, we can assure our colleagues that unless they have kept unusually well abreast of the advances in the physiology of the nervous system, they may spend a few profitable and pleasant hours with this little book and then turn it over to educated lay friends who wish a readable account of the workings of the nervous system and the principles which govern our efforts at maintaining its efficiency.

Abdominal Surgery. Clinical Lectures for Students and Physicians. By Thorkild Rovsing, Professor of Clinical Surgery at the University of Copenhagen. Edited by Paul Monroe Pilcher, A.M., M.D. Cloth. Price, $5. Pp. 477, with 136 illustrations. Philadelphia: J. B. Lippincott Company, 1914.

The title of this work is broader than the subject matter. Of the twenty-five chapters, five are on general subjects, such as the history of antiseptics and on the use of anesthetics, general and local, etc., seventeen are on surgery of the stomach, and the remaining three on echinococcus and abscess of the liver, and chronic jaundice. Each chapter is a clinical lecture, and the author says, "The clinical lecture unquestionably offers certain advantages and affords a point of view which cannot be found in the systematic compact text-book." It is true that the clinical lecture and demonstration offer great advantages, but these advantages rest largely in the demonstration, that is, in what one sees done, and the manner of doing it. All this is lost when the clinical lecture is put into print. In the clinic, what is said is exemplified by what is done; but when the clinical lecture is put into print minus the objective part, it has usually lost most of its value, as one seldom talks in the clinic in the concise manner in which one writes. Under the subject of "Local Anesthesia," the author says, "Amputations and resections cannot therefore be performed with this method, but even if they could be they should in my opinion never be done under local anesthesia, but under ether narcosis, because it is really inhuman to allow a fully conscious patient to undergo such dangerous and physically overwhelming operations when we are in possession of such a safe general anesthetic." He condemns Bier's method of local anesthesia, because "in the first place it is quite superfluous and as I said before inhuman, and secondly because one can safely foretell that it will prove very dangerous." From these statements it is very evident that the author has had little experience with modern local anesthesia, as none of the direful things which he predicts about it have come true; on the contrary, its use is rapidly gaining ground. Spinal anesthesia, on account of its high mortality, is justly discarded. The author's method of treating gastroptosis is specially interesting and the rather high percentage, namely, from 71 to 75 per cent., of complete relief from all symptoms after operation is encouraging, considering the complicated nature of the lesions found in these cases. The author's experience in gastric surgery has been quite large, and his lectures on this subject contain many valuable suggestions.

Acute General Miliary Tuberculosis. By Prof. Dr. G. Cornet. Translated by F. S. Tinker, B.A., M.B., B.C. Cloth. Price, $1.50 net. Pp. 103. New York: Paul B. Hoeber, 1914.

This monograph is devoted chiefly to the etiology and pathology of acute miliary tuberculosis. The etiology is chiefly concerned with the way in which tubercle bacilli can reach the blood from lesions already existing in the body. This may occur in three principal ways: by the transmission of a large number of bacilli from the thoracic duct into the veins, by rupture of a cheesy tuberculous gland or other collection into a blood vessel, or by the gradual invasion of several of the smaller blood vessels by tuberculous lesions from which the bacilli escape into the blood stream. The symptoms are sketched with some detail, and a brief discussion of diagnosis and prognosis is given. Strange to say, notwithstanding the exact methods of determining the presence of bacilli in the blood, the correct diagnosis of this condition has not been made clinically in the majority of cases. The author quotes Silbergleit to the effect that "in almost all of thirty-one cases of acute miliary tuberculosis reported by Lubarsch, the diagnosis was not clinically proved and, as a rule, the suspicion of it was not found once expressed." Prophylaxis and treatment occupy scarcely two pages. The author suggests, however, that "as healing is not absolutely impossible, we must not put our hands in our pockets but must strive to attain our aim, even though this is rarely accomplished." It is the hope and possibility of attaining this aim that gives value to a discussion of this subject, which is unfortunately too little known.

The Evolution of the Study of Anatomy and Its Important Relation to the Development of Surgical Knowledge. By J. Ewing Mears, M.D., LL.D. Cloth. Price, 75 cents. Pp. 26, with 6 illustrations. Philadelphia: William J. Dornan, 1914.

This little book gives an interesting account of the development of the science of anatomy from the early Greeks to the present time. Investigators from the beginning have had to combat the antipathy of the people to the desecration of the human body. Later, when the need of such study was more universally recognized, the difficulty of obtaining sufficient material is dwelt on, with its consequent grave robbing and "burking," and the outburst of indignation against the anatomists incident thereto. With the present reasonable laws for supplying the needs of medical schools, and the question of preservation of available material quite satisfactorily solved, the author pleads for an exhaustive study of the whole subject as a basis for surgical practice in general, or in any specialized line. It is an interesting essay.

Medicolegal

Practice of Medicine by Clairvoyants

(Commonwealth vs. Delon (Mass.), 106 N. E. R. 816)

The Supreme Judicial Court of Massachusetts overrules exceptions to a conviction of the defendant of practicing medicine in violation of Section 8 of Chapter 76 of the Revised Laws of Massachusetts. The court says that her defense was that what she did was done by her as a clairvoyant within the last clause of Section 9, which provides that the penalty of Section 8 shall not apply to a clairvoyant who violates none of the provisions of that section. Evidence was introduced that two men called on her for treatment; while asleep, holding the patient's hands, she gave advice to the first and told the second the nature of his sickness; and that in both cases she furnished the patients with medicine for which she was paid. The defendant took the stand in her own behalf and testified that she was not learned in diseases or in medicine; that when consulted by a patient she went into a trance and that while in the trance she was told by "occult force" what the matter with the patient was and what remedy to prescribe; that on coming out of the trance she prescribed what had been revealed to her while she was in it. The judge instructed the jury that if the defendant was a clairvoyant, in her line of practice, she was not within the exception specified in the statute if, for the cure, prevention or alleviation of any pain, disease or sickness of those seeking treatment from her, she prescribed or directed any drug or medicine, with the expectation of receiving compensation therefor. To this an exception was taken. Possibly the word "clairvoyant" might be interpreted to include one who hears communications made by "occult force" while in a trance. But in the accurate and indeed in the ordinary meaning of the word it is confined to a person who sees, while in a trance, things which by reason of distance or for other reasons are not ordinarily visible. The court is of the opinion that Section 9 above referred to, in creating exceptions to the general rule established by Section 8 of that act, is to be construed strictly. It follows that the word clairvoyant must be construed accurately. So construed, it does not authorize a defendant to prescribe medicines revealed to him by "occult force" while in a trance. The instruction given was right.

Roentgen-Ray Examination Required—Photographs of Body as Evidence

(Cincinnati, N. O. & T. P. Ry. Co. vs. Nolan (Ky.), 170 S. W. R. 650)

The Court of Appeals of Kentucky reverses a judgment recovered by plaintiff Nolan in this personal injury case, remanding the case for a new trial. The court says that he was a brakeman and was thrown to the ground by the giving way of a handhold at the top of a car. A little while after this he appeared at the station, apparently suffering great pain, and was taken to a hospital. The physicians in charge could find no evidence of a broken bone, but he declined to allow them to put him under an anesthetic. After staying at the hospital about a month, he was taken home, and later brought this suit against the company, charging, in substance that in his fall his hip-joint bones were broken. Thereafter the court entered an order that, on a certain date, he should go to the office of a named physician and submit himself to a Roentgen-ray examination, to be made by the physician for the purpose of ascertaining whether or not one of his hip bones was broken and what his injuries were, the physician to report in writing the result of the examination, an attorney of each of the parties being allowed to be present at the examination. It was also provided in the order that Nolan should not submit himself to the examination if in the opinion of the physician danger was to be reasonably apprehended thereform. On the appointed day he went to the physician's office with his attorney, who stated to the physician that Nolan had been exposed to the Roentgen rays four times within the past three weeks, and that they refused to allow him to make a roentgenogram unless he would be responsible for any trouble that might come from the use of the Roentgen ray, which responsibility the physician was not willing to assume, and no examination was made. The Court of Appeals holds that, when the case was called for trial a few days later, the defendant's motion that the trial be postponed that a Roentgen-ray examination might be made should have prevailed, on the facts stated, and that the defendant should not be forced to trial until the examination had been made, unless it was shown that it could not be made with safety to Nolan.

On the trial of the case the plaintiff introduced in evidence certain photographs taken of his legs and hips, and proved by his physician, who had examined him, that the photographs were a fair representation of their condition. The defendant objected to the introduction of the photographs in evidence, insisting that the plaintiff's person itself was the best evidence. There is some conflict in the authorities on the subject, but this court approves the rule adopted in some jurisdictions that the nude body of the plaintiff should not be exhibited in court, and that photographs of it may be given in evidence; but in order that the photographs may be introduced, it must be shown that they were fairly and correctly taken. Here there was no proof as to how the photographs were taken, and no proof that they were fairly taken; without this they should not have been introduced in evidence.

If the condition of any private part of the body of a male or female is material on any trial, and cannot be examined in court without an improper exposure of the person, it should, under an order of the court, be examined out of court by experts appointed for that purpose.

Society Proceedings

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Dec. 23, 1914

The President, Dr. William Duffield Robinson, in the Chair

Surgical Treatment of Chronic Indolent Ulcer of Stomach

Dr. Charles H. Frazier: There is no doubt that the incidence of organic lesions such as gastric and duodenal ulcer, compared with gastritis and other functional disorders, is greater than one would gather from the hospital reports. In my last fifteen cases, partial gastrectomy was performed in twelve instances for chronic ulcer alone, and in three for ulcer with carcinoma implanted. Of this number one patient, the fourth of the series, died. In diagnosis I have come to place reliance chiefly on the history and the roentgenogram. Operation is imperative in perforative ulcer, but surgery should not be thought of in cases of severe hemorrhage. I should ardently advocate surgical measures in chronic ulcer of the stomach and duodenum. In a series of 120 cases of gastric ulcer treated by medical measures, Parila (*Arch. f. Verdauungskr.*, 1912, xviii) showed that at the time of discharge from the hospital, 86 per cent. were completely cured or very much improved; only sixteen, or 13 per cent., were improved but not cured. Mostly within two years after this series of 120 patients left the hospital, 30 per cent. had died; 5 per cent. were unimproved; 35 per cent. improved (that is, they had either to live on a very restricted diet or were unable to resume their occupation without return of symptoms), and 30 per cent. were entirely well. In reporting 1,000 operations for gastric and duodenal ulcer, W. J. Mayo advises that the treatment of all duodenal and obstructing ulcers of the pyloric end of the stomach by gastrojejunostomy and excision, or infolding the ulcer, is satisfactory, and gives 98 per cent. of cures or great improvement. Secondly, 85 per cent. of ulcers of the body of the stomach will be either cured or greatly relieved by excision or suture compression with gastrojejunostomy. The remaining 15 per cent. will be more or less benefited, and so far as we have observed, none has been made worse by operation. The mortality of the surgical treatment of chronic gastric and duodenal ulcer is well under 2 per cent. My mortality for simple gastrojejunostomy in gastric and duodenal ulcer, excluding perforation, is under 2 per cent.

In the chronic callous ulcer of the stomach, the transverse resection, or partial gastrectomy as proposed by Rodman, is the operation of choice. In considering whether these ulcers shall be treated by gastrojejunostomy with or without pyloric exclusion, by excision or by partial gastrectomy, three essential and equally important factors are: the risk at operation or the immediate outcome; the incidence of cancer or the intermediate outcome, and the eventual condition of the patient or the end result. Greater care in the selection of cases and early recognition of symptoms will greatly reduce the mortality statistics. Furthermore, in starved cases of gastric ulcer, the treatment may be begun by a jejunostomy under local anesthesia, and the final operation may be delayed until, by feeding, a safe margin of vitality has been attained. In none of the results following partial gastrectomy in my own series has there been a suggestion either of recurrence of symptoms or of unpleasant consequences. In von Eiselsberg's series of 334 gastro-enterostomies for ulcer of the stomach and duodenum, there were seventeen deaths, a mortality of 5 per cent. The majority of these were, however, recent ulcers, and death was due in seven instances to recurring hemorrhage which the operation did not stop. Of the surviving patients, a little over half were recorded as cured, about one-seventh as improved, and thirty-one as unrelieved, of which eight were cases of duodenal ulcer. Of forty-one out of 334 patients who were known to have died at various times after gastro-enterostomy, twenty-three were traced, and of these thirteen, or more than half, died of cancer of the stomach, and six, or a quarter, of extension of the disease. I advocate operation in cases in which (1) because of recurrent hemorrhage the patient despite medical treatment, becomes progressively more anemic; (2) there is obstruction with retention; (3) the patients are disabled through pain or starvation, and (4) the diagnosis is uncertain as between chronic appendicitis, gall-bladder disease, or ulcer. The nearer to middle life the patient is, the more urgently do I emphasize the need of operation for fear of cancer. Transverse resection offers the greatest assurance of a complete and enduring "cure."

Simulation of Gastric and Duodenal Ulcer by Adhesions, Duodenal Dilatation, Visceroptosis, Etc.

Dr. George P. Muller: The most important feature of the history in duodenal and pyloric ulcers is the periodicity of attack. The most constant single symptom is pain. A right-sided tender point, occult blood, hyperchlorhydria and hypersecretion are also of affirmative importance, but their absence must never negative the diagnosis. The Roentgen-ray finding, next to the history, is the one important means of diagnosis, and the finding of hyperperistalsis and a residue in the stomach at the end of six hours make the diagnosis of duodenal ulcer probable. There are certain cases in which it is difficult to make an exact diagnosis. Ulcer of the pylorus and duodenum without complication, however, are usually clear-cut in symptomatology. In ulcer of the stomach proper, the attacks are not so clear-cut, and the symptoms are apt to be continuous for long periods, are not often eased by food and are more often affected by the taking of food. In the later stages of pyloric and duodenal ulcer, stenosis produces the symptoms of gastric dilatation. In all of these cases the Roentgen rays are of the greatest help. Any patient over 40 who has chronic gastritis or dyspepsia, or a so-called acute gastritis which does not disappear promptly, must be suspected; if he loses weight, strength and appetite, and has a continuance of his dyspepsia, he must be labeled cancer until it can be proved that the condition is due to another cause.

We should be cautious in making a diagnosis of ulcer in a patient previously operated on, unless we have eliminated the possibility of an omental adhesion dragging on the stomach and producing similar symptoms. It should be remembered that duodenal ulcer and appendicitis are often associated. Just as appendicitis may reflexly produce stomach symptoms, so will the mobile cecum and the Lane kink produce symptoms of "dyspepsia," although never quite simulating ulcer. Duodenal dilatation may simulate duodenal ulcer. In considering appendicular gastralgia or appendiceal dyspepsia, as it is variously called, we must distinguish between appendicitis with ulcer and appendicitis with symptoms simulating ulcer. There is no such lesion as chronic appendicitis. Inflammation is an acute process, and what we really mean when we speak of chronic appendicitis is that as a result of acute lesions, obliteration of more or less of the lumen, stricture of the lumen, peritoneal adhesions of fecal concretions exist. It should be remembered that chronic appendicitis with gastric symptoms may be simulated by the action of congenital bands and membranes persisting in the right iliac fossa. Chronic tuberculous diaphragmatic pleurisy may resemble gastric ulcer. Hematemesis is an uncertain indication for operation, and usually suggests some toxic erosion rather than surgical ulcer. The differential diagnosis of gastric ulcer or gallstone colic, and the gastric crises of tabes dorsalis, is well nigh impossible, unless the other characteristic symptoms of locomotor ataxia are detected. There are other conditions and lesions simulating gastric ulcer. The history is the keynote in diagnosis.

DISCUSSION

Dr. Edward H. Goodman: Internists and surgeons, it is evident, are practically in accord in the treatment of gastric and duodenal ulcer. Some cases of gastric ulcer are seen late by the surgeon because it is very hard for the internist to impress on the patient the need of operation. The indications given for surgical interference are agreed to by the majority of internists. I am not entirely in accord with Dr. Muller in believing that the symptoms of duodenal and gastric ulcer are essentially the same. I think they can be differentiated. I agree with him that the roentgenogram is the most important diagnostic help. I would emphasize the importance of observation of the patient for six months after operation, with examination of the stools for bleeding and to know that the ulcer has healed.

Dr. William L. Rodman: I agree with Dr. Muller that in the diagnosis of gastric ulcer we should rely first on the clinical history, and next on the roentgenogram. I do think however, that there will be cases in which diagnosis is impossible without an exploratory laparotomy. While I recognize the value of the Roentgen ray, I do not place the percentage of positive diagnosis by its use at so high a figure as 85. The impaired motility that comes with cancer is of great value in diagnosis. Roentgenograms frequently indicate the presence of hour-glass contraction when such is not the condition. I would emphasize the point made by both Drs. Muller and Frazier as to the inadvisability of operation in acute hemorrhage; chronic hemorrhage which is sapping the vitality of the patient calls for operation in nearly all cases. In addition to the ordinary means, I have found the injection of very hot water into the stomach valuable in the arrest of hemorrhage from either gastric or duodenal ulcer. I agree with Dr. Frazier that if the ulcer be a duodenal one or a pyloric one near the outlet, producing a constriction of the pylorus, gastro-enterostomy is always a satisfactory operation so far as the relief of symptoms is concerned; but that it is not the operation of choice even in these cases, because of the cancer incidence in this region. We should keep before us the fact that there are 75,000 deaths from cancer in the United States annually, and 26,000 from cancer of the stomach. According to Leopold, 35 per cent. of all cancers are in the stomach. More operations should be done in the precancerous stage, because very few cases of cancer that can be diagnosed clinically can be cured by operation. The most unsatisfactory thing about gastro-enterostomy is that many of the patients will rapidly convalesce, but that they die in eighteen months, and you feel sure that cancer was present at the time of operation. I would emphasize the point made by Dr. Frazier that it is not only impossible clinically to differentiate between cancer and ulcer, but that the diagnosis cannot be made at the operating table. In three cases out of four, when we remove suspicious ulcer it proves to be carcinoma.

Dr. Francis J. Dever: The actual diagnosis of gastric or duodenal ulcer is not so easy as it would appear to be. A large number of patients have no pain, and no bleeding from the stomach and rectum, and have a normal or subnormal quantity of hydrochloric acid in the stomach contents. We are, therefore, apt to be led astray by our insistence on the presence of certain symptoms. The occult blood test is valuable if all the antecedent conditions are proper. Blood may show in the feces, but it is well to remember that many patients have hemorrhoids. The use of the stomach tube in diagnosis should be restricted because of the danger of perforation and hemorrhage. It use is not justified except in the most obscure cases. It must be remembered also that gastric ulcer may be associated with gall-stones, appendicitis, etc. The differential diagnosis between gastric or duodenal ulcer and carcinoma is unimportant, because if we are not sure whether the patient has carcinoma, it is time to refer him to the surgeon.

Dr. David Riesman: The subject of gastro-intestinal disease was quite sterile and unprofitable until the surgeon attacked it. Of course, the surgeon has many advantages; he sees the patients generally in the hospitals; the medical man sees them in the office, in their homes, in the dispensary and in hospital practice. He cannot, therefore, obtain accurate data from all patients, and he cannot follow them as well as the surgeon who has operated on them. I believe there is no one symptom that diagnoses ulcer of the stomach or duodenum. If the history were so absolutely reliable as has been indicated, the Roentgen ray would be unnecessary; yet the surgeons depend on it to confirm the diagnosis, which many say can be made without seeing the patient. The atypical case is the one in which one needs the Roentgen ray and all clinical and laboratory help possible. The most important feature is the periodicity of the attacks. I agree with Dr. Frazier on the indications for operation. I believe we must accept the surgical experience on the frequency of cancer developing on ulcer.

Dr. James M. Anders: Cholelithiasis and duodenal ulcer are often confused with one another. The pain in cholelithiasis is almost periodical, at times coming on in a couple of hours after meals. In such cases the pain may be controlled by a change from a solid to a liquid diet. The pain in cholelithiasis is the more severe. When sufficiently intense to demand morphin, the condition may be ascribed to gall-stones, as a rule, rather than to duodenal or gastric ulcer. This point of difference is worthy of being emphasized. I have collected all of the cases of duodenal ulcer to be found in the literature, 262 cases, and in more than one-half, the cause was of intraduodenal origin. The obstruction in most cases was only partial, due to a healing or healed duodenal ulcer, and the symptoms were indefinite, but they were those of dilatation of the stomach indistinguishable from ordinary pyloric or partial pyloric obstruction when the seat of obstruction was above the ampulla of Vater. These cases have for the most part been diagnosticated duodenal ulcer in the active stage because there was a previous history—sometimes, however, years before—of the symptoms of duodenal ulcer. I think it is important to remember the frequency with which duodenal stenosis occurs, and that the symptoms when the stenosis is above the ampulla of Vater cannot always be differentiated from those of pyloric obstruction, although in many cases the history would include the symptoms of duodenal ulcer preceding, often by many years, the indications of partial stenosis.

Dr. Ernest LaPlace: Although Dr. Muller says there is no such condition as chronic appendicitis, there are cases in which the appendix shows signs of having been inflamed and in which it is bound down by adhesions. This does not necessarily mean that the disease existed continuously for a long time, but that at one time the appendix has been inflamed, causing changes which will produce the set of symptoms that are interpreted as chronic appendicitis.

Dr. S. Solis-Cohen: I am not impressed by the absence of definite symptoms of ulcer in a history in cases in which the other indications point to a serious lesion, for there are many classes of patients—some who exaggerate, some who describe symptoms perfectly; some, not at all. Until the cause of gastric ulcer is entirely settled, I doubt whether we shall be able to discriminate as closely as we might desire between operative and non-operative cases in which the diagnosis of gastric ulcer is positive.

NEW YORK NEUROLOGICAL SOCIETY

Meeting held Dec. 1, 1914

(Concluded from page 464)

Pain and Tenderness in Spinal Disease, and Its Surgical Treatment

Dr. Charles A. Elsberg: In 100 spinal operations I noted that there was a marked difference between the cervical and the dorsal spinal roots in structure as well as in course: the cervical roots originated from the cord over an area from 1 to 2 cm. wide, and ran as separate bundles to the dura, while in the dorsal region the bundles soon united to form one nerve root. Therefore, in the cervical region, a tumor could press on a few of the root bundles and give rise to symptoms from those bundles only, so that one should differentiate between root bundle symptoms and root symptoms. In several cases, pressure on the lower root bundles of the seventh cervical posterior root produced pain limited to the index finger. In the dorsal region, the roots first run downward, bending upward again at a very acute angle. Further investigation has shown that the outer surface of the dura of the spinal cord is very sensitive, while the cord itself is insensitive excepting near the origin of the posterior roots; the posterior roots themselves are very sensitive. Taking these facts into account, it is easy to understand how a small focus of malignant disease in the posterior and lateral surface of the body of a vertebra can cause very acute root pains. Extramedullary tumors which do not press on nerve roots might cause pain in the back from pressure on the inner surface of the dura, especially if they lie in front of the slip of the dentate ligament.

In several cases of extradural tumor I observed a peculiar set of symptoms. There was a sort of reverse Brown-Séquard, the motor symptoms being on the opposite side and the sensory symptoms on the same side as the tumor. In these cases there was a collection of fluid under the dura on the side of the tumor, which pressed the spinal cord to the opposite side against the walls of the spinal canal, so that the motor symptoms were due to the pressure of the contralateral pyramidal tract against the bony wall of the canal. This could be called *contre-coup*, and was similar to what occurs in the posterior cranial fossa when a cerebellar tumor of one side pushes the cerebellum to the other side and causes the facial nerve of the contralateral side to be pressed against the petrous portion of the temporal bone, with resulting facial paralysis on the side opposite to the lesion. I also noted peculiar anomalies of the spinal vessels which gave rise to irregular symptoms and which have not heretofore been described.

DISCUSSION

Dr. J. Ramsay: The vertebral pain associated with spinal tumors, I have always explained on the basis of a localized meningeal irritation. This pain is usually bilateral, and has not the unilateral distribution of the root pains. Dr. Elsberg did well to emphasize the importance of cutting the posterior root where it has been subjected to pressure for a considerable length of time. I should like to ask him as to the advisability of cutting these roots for the relief of a long-standing unilateral spasticity, when the site of operation exposes the necessary root distributions. The possibility of contralateral pressure symptoms occurring in connection with lesions of the cord is of extreme interest. The mechanism of contralateral pressure is recognized as a rare occurrence in the hemispheres of the brain and also in the brain stem, in which event its recognition would be of great importance from the operative point of view.

Dr. I. Abrahamson: I have seen two cases in which marked changes of the vessels of the cord were present. One specimen did not show any dilatation of the vein—only a moderate hyaline degeneration of its walls. These cases were quite typical in their symptoms, and were in sharp contrast to those common to extramedullary tumors of the cord. In the latter, the motor symptoms were markedly predominant, with root symptoms at the level, while the cases with varicose vessels showed a marked preponderance of the sensory symptoms, the motor symptoms never equaling the sensory in their intensity. The finding of this dilated blood vessel at the exact level and position that was indicated by the signs and symptoms left but little doubt as to its etiologic importance. When one has to deal with a rather atypical level cord picture suggesting an intramedullary lesion, and yet not characteristically so, associated with slight motor symptoms and marked sensory symptoms, one should be on the lookout for this condition of varix or a type of angioma of the cord.

Dr. Foster Kennedy: Apropos of angioma of the cord producing symptoms referable to the interior of the cord rather than to pressure on the outside of the cord—that is, intramedullary rather than extramedullary, it is well to bear in mind that a chronic syphilitic pachymeningitis of long duration very frequently produces such circulatory conditions, usually by nipping of the blood vessels, so as to cause a breaking down of the interior of the cord, a syphilitic syringomyelia. Does Dr. Elsberg regard these symptoms as being due to the direct pressure of the varix or to the circulatory disturbance produced thereby; in other words, are the symptoms mechanical or circulatory?

Dr. Alfred S. Taylor: One must be careful not to attribute too much importance to the presence of these varices. There is a considerable space between the cord and the dura, and I recall several cases in which I observed large veins in this location, and a simple decompression had given perfectly satisfactory relief, the condition probably being one of inflammation in the cord, and the enlarged vessels being an expression of such inflammation.

Dr. C. A. Elsberg: As to the advisability of cutting the posterior nerve roots for the relief of spasticity, I should advise such a step only in cases in which the cord had been subjected to pressure for a long time, perhaps four, five or six years, and had been injured beyond the hope of recovery. As to the significance of these enlarged vessels, I am convinced that they were not the ordinary congested vessels accompanying an inflammatory process. The veins were from six to eight times their normal size, larger than the radial artery. In 114 spinal operations, I have observed this peculiar enlargement six times; ordinary slight inflammatory enlargement I have seen many times.

The Response of the Organism to Environment.—One of the most remarkable features of organic evolution is that it results in the adaptation of the organism to its environment, and for this adaptation mutation and hybridization utterly fail to account. Of course, the argument of natural selection is called in to get over this difficulty. Those organisms which happen to exhibit favorable mutations will survive and hand on their advantages to the next generation, and so on. It has frequently been pointed out that this is not sufficient. Mutations occur in all directions, and the chances of a favorable one arising are extremely remote. Something more is wanted, and this something, it appears to me, is to be found in the direct response of the organism to environmental stimuli at all stages of development, whereby individual adaptation is secured, and this individual adaptation must rise again and again in each succeeding generation. Moreover, the adaptation must . . . tend to be progressive, for each successive generation builds on a foundation of accumulated experience and has a better start than its predecessors.—Arthur Dendy, *Medical Journal of Australia.*

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

January, XVII, No. 2, pp. 161-244

1 Origin of Lymphatics in Bufo. O. F. Kampmeier, Pittsburgh.
2 Statistical Study of Thoracic Duct in Man. H. K. Davis, Ithaca, N. Y.

Archives of Internal Medicine, Chicago

January, XV, No. 1, pp. 1-180

3 *Ventilatory Function of Lung in Emphysema and Asthma. C. F. Hoover and L. Taylor, Cleveland.
4 *Effect of Intravenous and Intraspinal Treatments of Cerebrospinal Syphilis. G. Draper, New York.
5 Mechanism of Labyrinthine Nystagmus and Its Modifications by Lesions in Cerebellum and Cerebrum. J. G. Wilson, Chicago, and F. H. Pike, New York.
6 *Relation of Pancreatic Organotherapy to Ketogenesis. E. G. Kirk, Chicago.
7 *Pathologic Physiology of Heart. C. J. Wiggers, New York.
8 *Distribution of Iodin in Cell Following Administration of Organic Iodin Preparations. F. C. McLean, Portland, Ore.
9 Statistics of Pellagra in Spartanburg County, S. C., Including Geographic Distribution of Disease and Its Relation to Race, Age, Sex and Occupation. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.
10 *Mental and Nervous Disorders Associated with Pellagra. H. D. Singer, Kankakee.
11 Blood-Count in Pellagra. O. S. Hillman and P. A. Schule, New York.
12 *Streptococcus Viridans in Its Relation to Infections of Upper Respiratory Tract. R. L. Cecil, New York.
13 *Case of Independent Ventricular Activity Occurring During Acute Articular Rheumatism. S. Neuhof, New York.

3. **Ventilatory Function of Lung in Emphysema and Asthma.**—The real difficulty of ventilation in emphysema and asthma, according to Hoover and Taylor, lies in the distention of the infundibula, and this fails to allow an equal diffusion of carbon dioxid throughout the alveolar air.

4. **Intravenous and Intraspinal Treatment in Cerebrospinal Syphilis.**—Twenty-five cases are analyzed by Draper. Symptomatically they have been arranged so that pain predominates at one end of the series and psychic disturbance at the other. These twenty-five patients were all treated intensively for active syphilis. All but one received combined intravenous and intraspinal injections. Mercury and potassium iodid were also used, but the chief reliance and interest were centered on the action of salvarsan, neosalvarsan and salvarsanated serum. Intravenously most of the patients were treated at weekly intervals with doses of salvarsan varying from 0.3 to 0.6 gm., or neosalvarsan in full doses. Salvarsan was the drug of choice and was changed for neosalvarsan only when the patient had an anaphylactic reaction. Intraspinally most of the cases received 30 c.c. of 50 per cent., or from 20 to 25 c.c. of full-strength serum, separated by centrifugalization from blood withdrawn forty minutes after the intravenous dose of salvarsan. The serum was heated to 56 C. and was introduced intraspinally the same day. Several patients have been bled before the intravenous dose, and then salvarsan up to a milligram added in vitro to the serum. This mixture was heated to 37.5 C. for forty minutes, and then 56 C. for half an hour. No serious symptoms followed any of the injections. Clinically very marked improvement occurs in all groups of cases. In the spinal types pain is usually relieved; ataxia helped in most instances, and not very markedly in a few. The bulbar types and those with fairly pronounced psychic disturbances, depending perhaps on meningeal irritation, show marked improvement in symptoms as well as in spinal fluid. The more definite psychic disturbances also may clear up completely, but their spinal fluids cannot in every case be brought to normal. The cell-count has almost always been reduced in them but the Wassermann test rarely disappears below 0.3 c.c.

In some cases, especially those treated with serum salvarsanized in vitro, transient numbness in the feet has appeared;

in other cases a slight failing in general robustness which may be an arsenic effect; and in several instances rather severe pains following the intraspinal injection have been seen. In two cases there has been a sudden increase in ataxia following a period of definite improvement. It is unsafe to give more than two, or at most three, consecutive injections of serum to which salvarsan has been added directly. In no case should more than 0.0005 gm. be added. On the other hand, apparently any number of intraspinal injections may be given with impunity when serum salvarsanized in vivo is used.

6. **Pancreatic Organotherapy and Ketogenesis.**—Kirk summarizes the results of his studies as follows: In the severe or total pancreatic diabetes of dogs, ketonuria of sufficient intensity to be demonstrable by the qualitative tests always develops provided the animal survives several days, and is on a diet covering its calorific requirements. The "total acetone" figures for adult normal dogs of from 5 to 15 kg. weight run about 0.005 to 0.1 gm. per diem. After total or near total pancreatectomy and on complete starvation (except for water), there is a slight gradual increase to about 0.01 gm. up to 0.09 gm. per diem. By judicious administration of a low calorie mixed diet after pancreatectomy the total acetone figures may be kept down to about the latter limits. Heavy protein diets of any sort exert a ketogenetic influence on the diabetic organism. Thus the feeding of an exclusive protein diet of lean beef for several days invariably precipitates a ketonuria appreciable by ordinary qualitative tests, the total acetone going up to 0.1 to even 0.4 gm.

On dynamogenetically equivalent amounts of raw pancreas the total acetone always increases greatly to 0.5 to 0.7 or even over 0.1 gm. per diem, which represents tremendous amounts for dogs; the color reactions have a maximum intensity. Such increases occur on a single feeding of pancreas. The feeding of raw liver is responded to by a greater ketonuria (0.3 to 0.4 gm.) than that following muscle feeding, but not nearly so marked as the reaction after pancreas. These differences were proved to be not due to variations in protein content or in glycogen content. Kirk doubts whether this ketogenetic influence of pancreatic opotherapy is altogether specific. Yet, in view of the consideration that it is so much greater for pancreas than for other representative protein foods we cannot deny the possibility of its being specific. As to the mechanism of its action, Kirk holds that it is not referable to increased absorption of protein or of fats, although both these are factors in additional increase of ketogenesis. It may be associated with increased intermediate metabolism of body-fat; he has not attempted to prove this. It is probably a toxic action, comparable to the increased glycosuria demonstrated by Reach on pancreas feeding. Doubtless such toxic influences are largely directed toward the hepatic functions. If views as the nature of diabetic acidosis be classified into two groups, namely, (*a*) those maintaining that this is a condition *sui generis* and (*b*) those holding it to be due solely to carbohydrate deficiency, then Kirk believes his experiments tend strongly to show that "acidosis" in dogs may vary independently of the status of carbohydrate ingestion and metabolism.

7. **Pathologic Physiology of Heart.**—The details of the pressure changes in the auricles, ventricles and aorta during auricular fibrillation were studied by Wiggers by means of optically recording manometers of high vibration frequency. The results obtained were as follows: Intra-Auricular Curve.—In experimental animals the fibrillating contractions in the auricle in themselves produce no intra-auricular pressure waves. The strong ventricular contractions cause a sharp oscillation in the auricle during early systole, while weaker contractions often cause a single rounded wave or a double oscillation similar to *c* and *v* waves of the normal pulse. When, as often happens, two or three weak contractions which produce no pulse in the arterial system follow each other, a series of small waves are created in the auricle (two to each ventricular systole) which gives the erroneous impression that they occur during ventricular diastole. Intraventricular Pressure Curve.—The intraventricular pressure curves show that the ventricle contracts at a very irregular rate. The height of the pressure and the gradient of the isometric rise before the semilunar valves open is determined largely by the interval between contractions. Hence, whenever the pace is set too rapidly a series of inefficient systoles results which may cause the arterial pressure to fall and the ventricle to dilate. As these weaker contractions often begin before the *a-v* valves are open and are not strong enough to open the semilunar valves, it follows that such contractions may be accompanied by no audible sound. It is important to realize this clinically in estimating the ventricular rate by auscultation in such cases. Central Arterial Pulse.—Since the aortic pressure is affected only by those systoles which elevate intraventricular pressure above the arterial diastolic pressure, it follows that the contour and amplitude of the arterial waves depends not only on the strength of ventricular contraction, but on the diastolic pressure as well. Since the venous pulse tracings taken from the supraclavicular region are always complicated by arterial impacts from the central arteries, the failure to recognize this may lead to misinterpretation of the systolic wave groups. The failure to recognize that the arterial pulse amplitude is not a criterion of the strength of the heart-beat in such cases has given rise to the erroneous impression that the strength of the ventricular systoles follows no law, whereas the intraventricular pressure curves show that the vigor of ventricular systole is largely governed by the time relations between contractions.

8. **Iodin in Cell Following Administration of Organic Iodin Preparations.**—McLean found that the iodin derivatives of fats and fatty acids are absorbed in a lipoid-soluble form after administration by the gastro-intestinal tract or subcutaneously, and are taken up and held in part by the lipoids of the cells. Iodalbin loses its identity during the process of absorption, and its iodin appears in the tissues entirely in water- or alcohol-soluble combination.

10. **Mental and Nervous Disorders Associated with Pellagra.**—Singer says that mental disturbance occurs in about 40 per cent. of all cases of pellagra. Such disturbances are more frequently with repeated attacks. Children are practically exempt. They are most common in men between 21 and 40, and women about 41 to 60. About 95 per cent. of the mental disorders are the direct result of the pellagrous intoxication, and although the mortality in such cases is much higher than in cases without such disorder, yet the mental disturbance will fully recover if the patient survives. They correspond to similar disturbances in other somatic diseases and in such case are often described as not "insanity." The remaining 5 per cent. are examples of mental disorder primarily dependent on the individual's make-up, or else are merely concomitant. Faulty nervous organization, including inadequate mental adaptability, seems to be associated with a predisposition to pellagra. This seems to afford the most satisfactory, even if only partial, explanation of the extraordinary frequency of pellagra arising among the insane, the increased frequency of functional psychoses and psychoneuroses and of nervous disease of the congenital anomaly type among pellagrins as compared with more normal individuals. Chronic "insanity" due strictly to pellagrous intoxication, if it occurs, is rare. Chronic nervous disease as the result of pellagra, if it occurs, is exceptional.

12. **Streptococcus Viridans and Infections of Upper Respiratory Tract.**—In a bacteriologic study made by Cecil of eighty-nine infections of the upper respiratory tract, the *Streptococcus viridans* has been the predominant organism in fifty cases, or 56.2 per cent. If the cases in which the pneumococcus or *Streptococcus hemolyticus* were predominant be added to this group, it can be said that in 85 per cent. of the cases studied, one or the other of these closely allied species was apparently concerned in the infection. *Streptococcus viridans* infections of the upper respiratory tract are characterized by their mild course and a tendency to chronicity and frequent recurrences, owing in great measure to the short duration of the acquired immunity. *Streptococcus viridans* infections of the upper respiratory tract, especially those of the tonsils, sinuses and alveolar sockets, are frequently asso-

ciated with endocarditis and arthritis. In these cases there is much evidence in favor of the theory that the infections of the serous membranes are secondary to the infections of the upper air passages. Autogenous *Streptococcus viridans* vaccines are of considerable value in cases in which structural changes are not too far advanced. Their administration may also be useful in the prevention of recurrences.

13. **Independent Ventricular Activity.**—A case of independent ventricular activity is described by Neuhof. The lowest ventricular rate is 56 per minute, the usual rate is 60 and remains so whether ventricular automatism is present or not. The electrocardiographic complexes of all beats are identical. At one time atropin injection is followed by ventricular escape. The occurrence of the automatic activity during the course of acute articular rheumatism and its disappearance later and a study of the physical signs make it possible that a small transient myocardial inflammatory focus at or near the auriculoventricular connections is the irritative cause of the abnormal mechanism.

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14 Measles: Incubation, Infectivity, Immunity, Early Manifestations. C. Herrman, New York.
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January 21, CLXXII, No. 3, pp. 81-120

20 Compensatory Exercises as an Aid in Treatment of Locomotor Ataxia. H. M. Swift, Portland, Me.
21 *Diabetes and Surgery. E. H. Risley, Boston.
22 Differentiation of Human and Cows' Milk by Color Tests. R. S. Eustis, Boston.
23 Recovery from Coccidioidal Granuloma. S. B. Wolbach, Boston.

21. **Diabetes and Surgery.**—The following rules are laid down by Risley in regard to operations on diabetics: (a) A thorough examination of the urine must be made in every case, especially for the detection of acetone and diacetic acid. (b) The total amount of ammonia must always be estimated. No operation except of the extremest emergency should be performed if there is 1 gm. of ammonia excreted in twenty-four hours, until this has been reduced to the normal amount, 75.9 gm. (c) An operation should be postponed should there be acetone or diacetic acid, even if the amount of ammonia is normal. (d) Much albumin in the urine is a contra-indication to operation and even in small amounts is of bad prognostic import. Most of the major operations of surgery have been and can be performed with success on diabetics. In Phillip's extensive series gathered from the literature the percentage of recoveries was 72.28, or a mortality of 27.72 per cent. The use of an anesthetic other than ether and chloroform, careful dietary treatment before operation, the prevention of sepsis and rapid technic will still further reduce the mortality.

Colorado Medicine, Denver

January, XII, No. 1, pp. 1-33

24 Andreas Vesalius. C. E. Edson, Denver.
25 Brain Abscess of Otitic Origin. F. Lassen, Pueblo.
26 Twilight Sleep. C. B. Ingraham, Denver.
27 Epidemiology of Poliomyelitis. J. W. Amesse, Denver.
28 Pathology of Acute Anterior Poliomyelitis. R. C. Whitman, Denver.
29 Clinical Aspects and Early Treatment of Acute Anterior Poliomyelitis. F. P. Gengenbach, Denver.
30 Modern Views on Biliary Calculosis. J. L. Mortimer, Denver.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

January, VI, No. 3, pp. 283-411

31 *Action of Strophanthin on Suprarenal Secretion. A. N. Richards and W. G. Wood, Philadelphia.
32 *Action of Conessin and Holarrhenin Alkaloids of Holarrhena Congolensis, and also of Oxyconessin. J. H. Burn, London.
33 *Studies on Action of Various Drugs on Vasomotor Center. J. D. Pilcher and T. Sollmann, Cleveland.

31. **Action of Strophanthin on Suprarenal Secretion.**—Experiments are described by Richards and Wood which show that the intravenous injection of strophanthin into dogs and cats is regularly followed by the development in the blood of capacity to cause decrease of tonus and inhibition of contractions in an isolated strip of intestinal muscle in a manner indistinguishable from that possessed by epinephrin. This result is not obtained after section of the splanchnic nerves or of the spinal cord between the fourth and fifth cervical nerves. This is evidence that strophanthin is capable of stimulating the central nervous mechanism controlling the secretion of the suprarenal glands. Experiments are also described which indicate that digitoxin has the same capacity in a high degree; but that strychnin and camphor are decidedly less active.

32. **Action of Conessin and Holarrhenin.**—The alkaloids of holarrhena congolensis, namely, conessin and holarrhenin. Burn states, have a very similar physiologic action, the former being more powerful than the latter. They both exert a considerable narcotic action on frogs, but in mammalia this effect is inappreciable. They also possess a local anesthetic action particularly marked when tested on the rabbit's eye. This property is of no practical value, as both alkaloids produce local necrosis when injected subcutaneously. Both conessin and holarrhenin are cardiac poisons, causing the isolated perfused heart to come to a standstill half way between systole and diastole. They possess a particularly destructive action on the tissue of A-V bundle, and even when injected intravenously produce incoordination, or heart-block. In small doses both alkaloids produce a rise in blood-pressure when injected intravenously. This rise is still seen after paralysis of the vacoconstrictor nerve endings with ergotoxin, and must therefore be due to a direct action on the blood vessel walls. Oxyconessin, an artificial oxidation product of conessin, has somewhat different properties. It possesses a curare action on the frog, but appears to have no general or local anesthetic action. When injected intravenously it produces marked cardiac acceleration and consequent rise of blood pressure. It has no true vasoconstrictor action.

33. **Action of Drugs on Vasomotor Center.**—According to Pilcher and Sollmann nitrites (sodium and amyl nitrite, nitroglycerin) usually stimulate the vasomotor center moderately; they never depress it directly. The nitrite fall in pressure is, therefore, purely peripheral. The stimulation of the center is probably secondary to the anemia from the lowered pressure. Nitrites and various pressor agents are mutually antagonistic. It is, therefore, suggested that the point of attack of nitrites differs essentially from that of pressor agents. Very large therapeutic doses of strychnin (0.05 mgm. per kilogram)—large enough to be dangerous under certain conditions are usually without action on the vasomotor center, but may stimulate the center moderately. Epinephrin has no direct effect on the central vasomotor apparatus. Frequently there may be slight central stimulation referable to increased pressure. Exceptionally dilatation may result, namely, when the increased blood supply relieves a preexisting asphyxial stimulation result.

In therapeutic doses, camphor is probably without action on the vasomotor center. Doses approaching the convulsive may cause moderate stimulation, which is greatly exaggerated when convulsions occur. Chloroform directly depresses the vasomotor center, but under certain conditions the center may be stimulated indirectly; when the blood pressure falls rapidly from cardiac depression or from cardiac arrest, or when asphyxia is induced either by direct respiratory depression or by depression of the oxygenating functions. Under such conditions there may be intense stimulation of the vasomotor center, with or without preceding depression of the center. Chloroform abolishes the effect of pressor reflexes (faradization of the sciatic nerves) at a higher level of blood pressure than such reflexes are ordinarily lost. The "vasomotor reversal" of Bayliss was also witnessed in one experiment.

Cyanids cause intense stimulation of the vasomotor center. This stimulation is probably asphyxial, as cyanids prevent the utilization of the oxygen in the blood independent of normal respiration. The rise of blood pressure caused by cyanids is proportional to the vasomotor stimulation. Nontoxic doses of aconite are without effect on the vasomotor center. Toxic doses of aconite produce maximal stimulation of the center, more intense than that from strong stimulation of sensory nerves. This is probably the main factor in the rise of blood pressure. Nicotin causes intense stimulation of the vasomotor center. There is no evidence of paralysis of the center; in fatal cases death results from other causes, while the tone of the center is still greatly above normal. Spartein is without direct action on the vasomotor center; but the depression of the respiration tends to produce asphyxial stimulation of the center.

Phenol usually depresses the vasomotor center, probably from its direct toxic action. Actual paralysis was not produced by the doses used. The action may be modified by the convulsant effects and by the anemic stimulation of the center, so that the center may be stimulated, or a period of stimulation may precede or follow the period of depression. Cholin tends to produce a marked direct depression of the vasomotor center, which seems to play a large part in the fall of blood pressure, and which seem to be abolished by atropin. However, other causes contribute to the fall of pressure. When these predominate, they may overcome the central depression, and even produce stimulation, by the anemia. Ergot and ergotoxin have practically no effect on the vasomotor center. Histamin also has no direct action, but the fall of blood pressure and respiratory disturbance usually produce a moderate stimulation. Hydrastis and its alkaloids, hydrastin and berberin, and the derivatives hydrastinin and cotarnin, have no direct action on the vasomotor center. The center may be excited from respiratory depression, convulsive phenomena or cardiac arrest.

Strophanthus stimulates the vasomotor center moderately; digitalis not at all, or to a much less extent. In neither case is the central action sufficient to influence the total action of the drug. Fatal doses, resulting in sudden cardiac arrest, stimulate the center greatly from the resulting asphyxia. Ether does not produce any direct effect on the vasomotor center, or stimulates it moderately. Occasionally there is evidence of depression of the center, but in this work the ether was not pushed to the point of vasomotor paralysis. The stimulation of the center is probably largely the result of asphyxia from respiratory depression. The active principle of the infundibular portion of the pituitary gland has but slight effect on the vasomotor center. Occasionally there may be depression and somewhat more frequently moderate stimulation, but these changes are so inconstant that they are probably secondary to the rise of blood pressure (depression of the vasomotor center, as in McCord's experiments), or to respiratory embarrassment (stimulation of the vasomotor center, as in the non-curarized dog). The response to sciatic stimulation is not materially diminished during the pituitary rise. This indicates that the pituitary principles act peripherally on the arterial muscle. The intravenous injection of lactic acid, in doses 1 to 7 c.c. of the N/7 solution per kilogram of body weight, produces moderate and temporary stimulation of the vasomotor center, independent of the behavior of the blood pressure. This is presumably a manifestation of the general excitatory effect of the increased H ion concentration of the blood.

Journal-Lancet, Minneapolis

January, 15, XXXV, No. 2, pp. 25-52

34 Hair-Ball in Stomach: Other Foreign Bodies in Gastro-Intestinal Tract. W. C. Carroll, Rochester.
35 Notes from German Obstetric Clinics. J. Litzenberg, Minneapolis.
36 Construction of Medical Papers. M. H. Mellish, Rochester.
37 Emergency Surgery in Country Practice. Report of Cases. M. M. Grove, Dell Rapids, S. Dak
38 Subphrenic Abscess. N. O. Ramstad, Bismarck, N. Dak.

Kentucky Medical Journal, Bowling Green

January 15, XIII, No. 2, pp. 53-86

39 Emphysema. E. M. Harrison, Forkridge.
40 Anterior Poliomyelitis. E. M. Howard, Middlesboro.
41 Corneal Ulcer; Its Complication and Sequelae. B. A. Cockrell, Pineville.
42 Gonorrhea and Its Treatment. T. T. Gibson, Middlesboro.
43 Fractures. C. K. Broshead, Middlesboro.
44 Medical Fads and Fancies Vs. Medical Facts. H. C. Chance, Middlesboro.
45 Diseases of Suprarenals. O. P. Nuckols, Pineville.
46 Rheumatic Fever. T. H. Curd, Middlesboro.
47 Cholecystitis. L. J. Jones, Middlesboro.
48 Vaccines and Serums. C. F. Clayton, Balkan.
49 Bone Grafting for Pott's Disease and for Ununited Fractures. E. W. Ryerson, Chicago.
50 Nephritis. L. J. Jones, Middlesboro.
51 Clinical Aspects of Carbohydrate Metabolism. L. Hamman, Baltimore.
52 *New Method of Examining for Movable or Floating Kidney. C. Pope, Louisville.
53 Gunshot Wound of Knee. W. Bach, Jackson.

52. **New Method of Examining for Movable or Floating Kidney.**—Pope's method is described as follows: With the abdomen bared (in women a sheet is thrown around the shoulders, covering the abdomen like a large shawl or a special kimona) the patient stands directly in front of the physician, who is seated in a chair. The right hand, or fist (if the right kidney), is placed on the right rectus and sufficient pressure made to overcome any rigidity. The patient is then instructed to lean forward over the right shoulder of the examiner (for the right kidney) and the tissues between the abdominal wall and the back are grasped between the thumb and fingers of the left hand (for the right kidney). By assuming the standing and forward bending position, the kidney moves or descends downward and forward toward the abdominal wall. In this position it is more easily accessible to the examining fingers. The thumb and fingers gently grasp the kidney between them and are thus enabled to detect whether the kidney is movable or not, and the extent or degree of movability. In examining the left kidney the process is reversed.

Lancet-Clinic, Cincinnati

January 16, CXIII, No. 3, pp. 55-80

54 Paranoia. E. A. North, Cincinnati.
55 Heart Irregularities—Auricular Fibrillation, Heart Block. J. E. Greiwe, Cincinnati.
56 *Certain Physical Signs Referable to Diaphragm and Their Importance in Diagnosis. R. Dexter, Cleveland.
57 Acute Gastric and Duodenal Perforating Ulcer. F. Fee, Cincinnati.

56. Abstracted in THE JOURNAL, Nov. 21, 1914, p. 1877.

Laryngoscope, St. Louis

December, XXIV, No. 12, pp. 963-1025

58 Conservative Treatment of Suppuration of Accessory Sinuses of Nose. E. B. Gleason, Philadelphia.
59 Cases of Inflammatory Affections of Labyrinth. W. C. Phillips, New York.
60 New Submucous Septal Operation. O. Tydings, Chicago.
61 Few Interesting Points in Regard to Bronchial Asthma and Severe Case Cured by Intranasal Surgery. W. T. Patton, New Orleans.
62 Retropharyngeal Abscess with Rupture, Asphyxiation and Death Following Acute Attack of Tonsillitis. C. C. Charlton, Atlantic City, N. J.
63 Elimination of Speech and Voice Defects. B. Cadwallader, Cleveland.
64 Electrode for Fulgurating Larynx. S. Yankauer, New York.
65 New, Direct-View, Self-Retaining Laryngoscope. M. Unger, New York.

Medical Record, New York

January 2, LXXXVII, No. 1, pp. 1-42

66 Artificial Pneumothorax. M. Fishberg, New York.
67 *Simple, Easily Regulable Method of Applying Abduction in Treatment of Shoulder Disability. W. M. Brickner, New York.
68 *Tuberculin in Pulmonary Tuberculosis. L. S. Peters, Albuquerque, N. M.
69 Diseases of Skin in Pregnancy. P. E. Bechet, New York.
70 Medical Inspection of Schools in Connecticut. F. H. Barnes, Stamford, Conn.
71 Suggestion in Cases of Late Operation for Intestinal Obstruction. J. C. Johnston, McAlester, Okla.
72 *Etiology of Pellagra. B. W. Page, Lumberton, N. C.

ciated with endocarditis and arthritis. In these cases there is much evidence in favor of the theory that the infections of the serous membranes are secondary to the infections of the upper air passages. Autogenous *Streptococcus viridans* vaccines are of considerable value in cases in which structural changes are not too far advanced. Their administration may also be useful in the prevention of recurrences.

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22 Differentiation of Human and Cows' Milk by Color Tests. R. S. Eustis, Boston.
23 Recovery from Coccidioidal Granuloma. S. B. Wolbach, Boston.

21. **Diabetes and Surgery.**—The following rules are laid down by Risley in regard to operations on diabetics: (a) A thorough examination of the urine must be made in every case, especially for the detection of acetone and diacetic acid. (b) The total amount of ammonia must always be estimated. No operation except of the extremest emergency should be performed if there is 1 gm. of ammonia excreted in twenty-four hours, until this has been reduced to the normal amount, 75.9 gm. (c) An operation should be postponed should there be acetone or diacetic acid, even if the amount of ammonia is normal. (d) Much albumin in the urine is a contra-indication to operation and even in small amounts is of bad prognostic import. Most of the major operations of surgery have been and can be performed with success on diabetics. In Phillip's extensive series gathered from the literature the percentage of recoveries was 72.28, or a mortality of 27.72 per cent. The use of an anesthetic other than ether and chloroform, careful dietary treatment before operation, the prevention of sepsis and rapid technic will still further reduce the mortality.

Colorado Medicine, Denver

January, XII, No. 1, pp. 1-33

24 Andreas Vesalius. C. E. Edson, Denver.
25 Brain Abscess of Otitic Origin. F. Lassen, Pueblo.
26 Twilight Sleep. C. B. Ingraham, Denver.
27 Epidemiology of Poliomyelitis. J. W. Amesse, Denver.
28 Pathology of Acute Anterior Poliomyelitis. R. C. Whitman, Denver.
29 Clinical Aspects and Early Treatment of Acute Anterior Poliomyelitis. F. P. Gengenbach, Denver.
30 Modern Views on Biliary Calculosis. J. L. Mortimer, Denver.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

January, VI, No. 3, pp. 283-411

31 *Action of Strophanthin on Suprarenal Secretion. A. N. Richards and W. G. Wood, Philadelphia.
32 *Action of Conessin and Holarrhenin Alkaloids of Holarrhena Congolensis, and also of Oxyconessin. J. H. Burn, London.
33 *Studies on Action of Various Drugs on Vasomotor Center. J. D. Pilcher and T. Sollmann, Cleveland.

31. **Action of Strophanthin on Suprarenal Secretion.**—Experiments are described by Richards and Wood which show that the intravenous injection of strophanthin into dogs and cats is regularly followed by the development in the blood of capacity to cause decrease of tonus and inhibition of contractions in an isolated strip of intestinal muscle in a manner indistinguishable from that possessed by epinephrin. This result is not obtained after section of the splanchnic nerves or of the spinal cord between the fourth and fifth cervical nerves. This is evidence that strophanthin is capable of stimulating the central nervous mechanism controlling the secretion of the suprarenal glands. Experiments are also described which indicate that digitoxin has the same capacity in a high degree; but that strychnin and camphor are decidedly less active.

32. **Action of Conessin and Holarrhenin.**—The alkaloids of holarrhena *congolensis, namely,* conessin and holarrhenin, Burn states, have a very similar physiologic action, the former being more powerful than the latter. They both exe a considerable narcotic action on frogs, but in mammal this effect is inappreciable. They also possess a local ane *thetic action particularly marked when tested on the* rabbit eye. This property is of no practical value, as both alkaloi produce local necrosis when injected subcutaneously. Bo conessin and holarrhenin are cardiac poisons, causing t isolated perfused heart to come to a standstill half wa between systole and diastole. They possess a particularl destructive action on the tissue of A-V bundle, and eve when injected intravenously produce incoordination, or hear block. In small doses both alkaloids produce a rise in bloo pressure when injected intravenously. This rise is still see after paralysis of the vacoconstrictor nerve endings wit ergotoxin, and must therefore be due to a direct action o the blood vessel walls. Oxyconessin, an artificial oxidatio product of conessin, has somewhat different properties. I possesses a curare action on the frog, but appears to hav no general or local anesthetic action. When injected intra venously it produces marked cardiac acceleration and con sequent rise of blood pressure. It has no true vasoconstricto action.

33. **Action of Drugs on Vasomotor Center.**—According t Pilcher and Sollmann nitrites (sodium and amyl nitrite, nitroglycerin) usually stimulate the vasomotor center moderately; they never depress it directly. The nitrite fall in pressure is therefore, purely peripheral. The stimulation of the center is probably secondary to the anemia from the lowered pressure. Nitrites and various pressor agents are mutually antagonistic. It is, therefore, suggested that the point of attack of nitrites differs essentially from that of pressor agents. Very large therapeutic doses of strychnin (0.05 mgm. per kilogram)—large enough to be dangerous under certain conditions are usually without action on the vasomotor center, but may stimulate the center moderately. Epinephrin has no direct effect on the central vasomotor apparatus. Frequently there may be slight central stimulation referable to increased pressure. Exceptionally dilatation may result, namely, when the increased blood supply relieves a preexisting asphyxial stimulation result.

In therapeutic doses, camphor is probably without action on the vasomotor center. Doses approaching the convulsive may cause moderate stimulation, which is greatly exaggerated when convulsions occur. Chloroform directly depresses the vasomotor center, but under certain conditions the center may be stimulated indirectly; when the blood pressure falls rapidly from cardiac depression or from cardiac arrest, or when asphyxia is induced either by direct respiratory depression or by depression of the oxygenating functions. Under such conditions there may be intense stimulation of the vasomotor center, with or without preceding depression of the center. Chloroform abolishes the effect of pressor reflexes (faradization of the sciatic

New York Medical Journal

January 23, CI, No. 4, pp. 141-184

95 History of Medical Ethics. G. W. Cook, Washington, D. C.
96 *How Shall We Know When Gonorrhea in Male is Cured? A. L. Wolbarst, New York.
97 Early Diagnosis and Operation for Gall-Stones. G. Torrance, Birmingham, Ala.
98 Physical Examination of Employees of Department of Health of City of New York. C. B. Slade, New York.
99 Hemorrhoids and Hyperchlorhydria. E. Palier, New York.
100 Untrustworthy Galenicals. H. Beates, Jr., Philadelphia.
101 Laplace Operation. J. J. Gilbride, Philadelphia.
102 Modern Treatment of Sciatica. H. Climenko, New York.
103 Subacromial Bursitis. S. O. Fields, Newport News, Va.

96. **How Shall We Know When Gonorrhea in Male is Cured?**—Wolbarst states that no patient can be declared cured of gonorrhea unless the following tests have been carefully and repeatedly performed: 1. Microscopic and cultural examination of the centrifugalized morning urine, as well as the washings from the irrigation of the anterior urethra. 2. Microscopic and cultural examination of the urethral discharge—whether spontaneous or artificial. 3. Microscopic and cultural examination of the massaged secretion of the prostate and seminal vesicles. 4. Urethroscopic examination of the anterior and posterior urethra. 5. Complement fixation test. 6. Skin reaction and hypodermic injection with gonococcus vaccine (still *sub judice*). Should all of these tests prove negative repeatedly, the patient may be declared cured; but the physician cannot assume the full responsibility and guarantee the cure. The patient himself must assume that responsibility.

Northwest Medicine, Seattle, Wash.

January, VII, No. 1, pp. 1-34

104 Cerebrospinal Fluid as an Aid to Diagnosis of Obscure Cases of Syphilis of Central Nervous System. L. Selling, Portland, Ore.
105 Case of Syphilis of Internal and Middle Ear. E. E. Maxey, Boise, Ida.
106 Early Diagnosis and Treatment of Gall-Stones. G. F. Koehler, Portland, Ore.
107 Mucous Glands of Gall-Bladder. J. E. Else, Portland, Ore.
108 Modern Medicine and Its Social Responsibilities. F. R. Green, Chicago.
109 State Industrial Insurance in Washington. H. E. Allen, Seattle.

Southern Medical Journal, Mobile

January, VIII, No. 1, pp. 1-80

110 Old Time Physician. C. T. Grayson, Washington, D. C.
111 Some Medical Aspects of Negro. R. Wilson, Jr., Charleston, S. C.
112 *Public Health. R. M. Cunningham, Birmingham.
113 *Health—National Asset. J. H. Florence, Houston, Tex.
114 Effect of Habitual Use of Tobacco. R. L. White, Clayton.
115 Non-Technic Differentiation of Cardiac Arrhythmias. W. M. Barton, Washington, D. C.
116 *Defective Metabolism and Its Results. J. G. Palmer, Opelika.
117 Pellagra in Children. Report of Cases in Montgomery, Ala. G. J. Greil, Montgomery, Ala.
118 *Observations Further Incriminating Sugar-Cane Products as Main Cause of Pellagra in South. R. Blosser, Atlanta, Ga.
119 Case of Sarcoma of Kidney. J. M. Proctor, Hot Springs, Ark.
120 Case of Primary Typhoid Meningitis. J. E. Robinson, Temple, Tex.
121 Case of Syphilitic Pyloric Stenosis. T. B. Hubbard, Montgomery.
122 *Splenectomy with Some Unusual Pathologic Findings. P. C. Perry, Jacksonville, Fla.
123 Use of Clamps in Resection of Bladder. Report of Case. C. W. Allen, New Orleans.
124 Indirect Transfusion of Blood. J. H. Gibbes, Columbia, S. C.
125 Syphilis and Wassermann Reaction. C. W. Shropshire and C. Watterston, Birmingham.
126 Reduction of Preventable Disasters in Ear, Nose and Throat Surgery. H. Dupuy, New Orleans.
127 *Tonsillectomy During Acute Endocarditis. Report of Cases. W. G. Harrison, Birmingham.
128 Opportunities for Medical Work in England, Ireland and Scotland. C. J. McGee, Knoxville, Tenn.

112. Abstracted in The Journal, Dec. 12, 1914, p. 2159.

113. **Health—National Asset.**—Florence summarizes his paper as follows: Educate the people, beginning in the school and in the homes. Agitate health matters in season and out of season. Rely on the press for aid. Get in close touch with your law-makers that they may act with foresight and intelligence. Organized medicine must, as never before, be up and doing. There should be medical men to lecture at each farmers' institute or congress, also at the meeting of civic leagues, woman's clubs and commercial bodies; in fact, on every occasion possible let education and publicity be the keynote. There is no reason why the gospel of health should not be preached from every pulpit in the United States. Inform corporations of the money value of preserving health and life. Instruct each individual what sickness means in dollars and cents to each and every household. Be alive to the issues; extend your endeavors to the end that the citizenship of our great commonwealth may be a happy, healthful, home-loving and God-fearing people.

116. **Defective Metabolism and Its Results.**—Palmer feels himself justified in considering auto-intoxication as being the primary cause of all cases of rheumatism, Bright's disease, arteriosclerosis, apoplexy, cholangitis, pancreatitis, cardiac disease, many exanthemata, gastric ulcer and even cancer of the stomach as well as many other troubles with which we have to deal, to defective metabolism and the resulting auto-intoxication. The physical and mental degeneracy resulting from toxemia, he says, can and does bring about a physical degeneracy that is transmissible and many children are the victims of hereditary, degeneracy, the sins of the parent being handed down even unto the third and fourth generation. There is no work of the physician demanding more earnest thought, or no labor that we can perform for the public that will bring greater returns than to teach the individual the importance of how to eat and what to eat, what to drink, and how to live so as to protect himself against organic failures.

118. **Sugar-Cane Products as Cause of Pellagra.**—The following facts in Blosser's opinion seem to support his claim that sugar-cane products are causing at least a large majority of the cases of pellagra in the South. All but three of the 133 pellagrins whom he has questioned admit having eaten sugar-cane products very freely. Exclusion of all partially refined sugars and sugar-cane syrups from the diet of pellagrins has enabled him to cure 121 out of 133 patients treated; of the remaining 12, 8 were improved and 4 died, a mortality of 3 per cent. Recurrences have not occurred in any cases in which the diet was carried out as directed; slight recurrences developed in five cases, but in each of these it was found that the patients had previously relapsed into their former diet.

The presence in sugar-cane products of an actively poisonous substance is shown by a feeding experiment reported by Blosser a short time ago. A moderate amount of sugar-cane syrup was administered to a dog, together with a diet which was in other respects varied and well balanced; at the end of six months the dog was found to have developed pronounced organic changes of the liver, intestines and kidneys. These conditions could not have been due to an unbalanced diet or to the absence of "vitamines." The organs affected in this feeding experiment are the ones mainly affected in pellagra.

122. **Splenectomy.**—There are many points of interest in Perry's case. First, following a child-birth, in December, 1913, and the patient's admission to the hospital, in January, 1914, suffering from acute empyema of the gall-bladder, associated with stone, her uneventful recovery from this condition, followed by a period of apparent good health; her readmission to the hospital in August, 1914, with chills and fever, and a mass in the abdomen. Repeated blood examinations failed to reveal the presence of malarial parasites in the peripheral circulation, but by cystoscopic examination it was determined that she had a dead kidney on the left side. A nephrectomy was done, but the condition failing to improve under careful medical treatment, with a persistence of chills and a rise of temperature at irregular intervals, which could not be explained, finally led to a splenectomy, with fatal results.

127. **Tonsillectomy During Acute Endocarditis.**—Harrison believes that it is often wiser to perform tonsillectomy during an acute attack of endocarditis and remove the source of infection than delay with the hope of operating after the acute attack has subsided. One can sometimes cleanse the tonsil crypts by local applications and syringing with anti-

septic solutions, but in spite of the most assiduous care it will sometimes be impossible to find every focus. As to vaccines, Harrison believes that cultures should be made from the tonsil in all cases of joint or heart involvement and properly preserved, from which vaccines could be made and the patient properly treated with these in cases in which the fever and other signs of infection do not disappear within a reasonable time after the operation.

Tennessee State Medical Association, Nashville

December, VII, No. 8, pp. 315-356

129 Treatment of Trachoma in Its Several Stages. G. C. Savage, Nashville.
130 *Gall-Bladder Disease. J. H. Carter, Memphis.
131 Some Advances in Roentgen Ray Therapy. W. S. Lawrence, Memphis.
132 Tic Douloureux. W. St. John, Bristol.
133 Chronic Duodenal Ulcer. J. P. Tillery, Knoxville.
134 Some Needed Medical Legislation in Tennessee. S. W. Woodyard, Greenville.
135 Pellagra. J. J. Waller, Oliver Springs.

January, No. 9, pp. 357-402

136 Social Cankers. O. J. Porter, Columbia.
137 Two Cases. J. F. Gallagher, Nashville.
138 Sterilization. S. M. Miller, Knoxville.
139 Practical Consideration of Tracheobronchoscopy. H. Ezell, Nashville.
140 Abdominal Surgery. L. L. Sheddan, Knoxville.
141 Diagnosis of Early Pulmonary Tuberculosis. E. M. Fuqua, Nashville.
142 Indications for Removal of Faucial Tonsils. A. B. Dancey, Jackson.
143 To a Graduating Class. B. B. Cates, Knoxville.
144 Hyperthyroidism—Its Etiology, Symptomatology and Treatment. J. B. Haskins, Chattanooga.

130. Abstracted in The Journal, May 16, 1914, p. 1583.

Washington Medical Annals

January, XIV, No. 1, pp. 1-55

145 School Clinics. G. H. Heitmuller, Washington, D. C.
146 Chronic Gonorrhea. Report of Case. A. Kemble, Washington, D. C.
147 Roentgenographic Gastro-Intestinal Diagnosis. J. R. Verbrycke, Jr., Washington, D. C.
148 Myiasis of Urinary Passages. E. F. King, Washington, D. C.
149 *Unusual Case of Anaphylaxis Following Administration of Tetanus Antitoxin. D. G. Smith, Washington, D. C.
150 Experience at Vera Cruz. G. T. Vaughan, Washington, D. C.
151 Experiences with Marine Expeditionary Force in Mexico. R. M. Little, U. S. Navy.
152 Persistent Glycosuria Symptom of Functional Liver Failure from Focal Infection. E. F. King, Washington, D. C.

149. **Anaphylaxis Following Administration of Tetanus Antitoxin.**—The unusual features of Smith's case were: 1. The length of time elapsing between the injection of the antitoxin and the onset of anaphylactic symptoms, which was nine days. 2. The eruption, which was of a dual type, lasting four days. 3. The edema of the face, lasting six days. The edema put in its appearance promptly after the eruption had vanished. Although in the morning it was hardly discernible, in the afternoon the face was so puffed as to be startling in appearance; the eyelids being so edematous that they were opened with difficulty. 4. The joint infection, accompanied by fever, pain, swelling, prostration and delirium, lasting a week, making a total of twenty-seven days after injection. The series of symptoms started in nine days after the time of injection and lasted until the twenty-seventh. The treatment employed was eliminative and symptomatic. The bowels and kidneys were kept active and the patient kept in bed when necessary, and the pain, pruritus and fever met by appropriate measures. The patient is now in good health.

West Virginia Medical Journal, Wheeling

January, IX, No. 7, pp. 217-254

153 Abderhalden's Serodiagnosis of Pregnancy and Its Practical Application. A. V. Weinberger, Wheeling.
154 Epidemic Cerebrospinal Meningitis. B. B. Wheeler, McKendree.
155 Acute Tubotympanic Catarrh. J. M. Sites, Martinsburg.
156 Purity of Our Streams Should Be Preserved. S. G. Highland, Clarksburg.
157 General Subcutaneous Emphysema. Report of Case. H. W. Daniels, Elkins.
158 Diagnosis and Treatment of Meningitis. S. L. Cherry, Clarksburg.
159 View Point Sanatorium for Tuberculosis. T. Gillespy, Wheeling.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Sin case reports and trials of new drugs are usually omitted.

Archives of Roentgen Ray, London

January, XIX, No. 8, pp. 275-306

1 Some Experiments with Roentgen Ray Filters. J. H. Sequeira.
2 Positive Diagnosis of Duodenal Ulcer. A. E. Barclay.
3 Diathermy—Its Production and Use in Medicine and Surgery. E. P. Cumberbatch.
4 Accurate Localization of Foreign Bodies in Tissues by Roentgen Rays. A. J. Cleveland.

British Medical Journal, London

January 9, I, No. 2819, pp. 57-100

5 Cases of Nerve Concussion Due to Bullet and Shell Woun A. H. Tubby.
6 *Treatment of Infantile Paralysis. W. MacKenzie.
7 Field Hospital in Belgium. J. H. Beavis and H. S. Souttar.
8 Anomalous Case of Enteric Fever in an Inoculated Subject. E. A Bourke and S. Rowland.
9 *Appendicitis Treated with Anticolon Bacillus Serum and Vaccine. A. C. Guthrie.
10 Warble-Fly-Hypoderma. A. E. Shipley.
11 Medical Work in Early Seventies in County Infirmary in Ulster. G. St. George.

6. **Treatment of Infantile Paralysis.**—The treatment for any paralyzed muscle is immediate and anatomic rest. A muscle is rested only when it is placed in a position in which its work is zero and its origin and insertion are as nearly as possible on the same horizontal plane, for the resumption of function, which should be gradual, is always easiest along a straight line. The zero position is the position of anatomic rest in which the individual muscle itself is relaxed and both its own action and that of its opponent prevented.

MacKenzie's practice when reeducating a muscle is to begin each day at zero and gradually work up to and beyond the highest point achieved the day before. If, for example, the knee be contracted owing to a paralyzed quadriceps and overacting flexors, it is obvious that the former being at a disadvantage for functionating, equilibrium has been destroyed. Hence place the quadriceps in a position of relaxation (knee extension), prevent the overaction of its opponent when resting by means of a splint, or when exercising by means of position, then daily work at it to restore the lost equilibrium, by recognizing that it is incorrect to flex th knee beyond the point from which extension is possible—tha is, at which effort becomes manifest—thus recognizing the cessation of its opposition to its opponent flexor. Reeducation of the "paralyzed" muscle. No definite time can be stated when reeducation should begin, but the two guides would be the temperature and pain; until the cessation of these, the limbs are best rested as advised, and rested only. The difficult question then arises, to find some work the muscles can actually do; and although such work may be the minimum for a healthy muscle, it may be the maximum for the affected muscle. It is not a question of paralysis of muscle, but the loss of certain functions of the muscle, and it is to obtaining the resumption of these that our energies are directed. MacKenzie also discusses fully the surgical treatment of this condition.

9. **Appendicitis Treated with Anticolon Bacillus Serum and Vaccine.**—The possibility of appendicitis being due in some measure to infection of *B. coli communis* suggested to Guthrie that the serum and vaccine of the colon bacillus might be of service in this affection. He has tried it with success in no fewer than twenty-two cases. Most of the cases were in the acute stage; a few showed symptoms of chronic appendicitis, and in one the symptoms were of a postoperative character—that is, there was pain in the region of the cecum simulating appendicitis two years after the appendix had been removed. In only one case has there been a recurrence; here, too, little serum was used and no vaccine. What struck Guthrie most was the wonderful effect of the serum in causing complete relief from pain, also the feeling of well-being and hopefulness of recovery—a feeling entirely absent before treatment. It is therefore believed the serum should be used in the first stage, when the pain is general.

The most suitable dose is 20 c.c. anticolon bacillus serum; 10 c.c. should be injected subcutaneously first in the right and then in the left hypochondriac region. A few days later 100 million colon bacillus vaccine should be injected in a similar way into the deltoid region. This is to prevent recurrence. As organisms other than the *B. coli communis* may be the determining cause of this disease, the "fixation of complete test" should be tried, using the patient's serum and the most probable organism (*B. coli communis, Pneumococcus*, streptococcus), a corresponding serum or vaccine being used. The anticolon bacillus serum probably acts chiefly as an antitoxin, also as a counterirritant, causing local leukocytosis. It has also probably a physical effect, changing the equilibrium in the surrounding fluids and thereby producing increased osmotic pressure and favoring phagocytosis of the bacilli.

Edinburgh Medical Journal

January, XIV, No. 1, pp. 1-80

12 Case of Carcinoma of Pylorus, Old Obstruction in Left Coronary Artery, with Organized Infarct of Heart Wall and Aneurysm Formation. Recent Pulmonary Thrombosis. A. M. Drennan.
13 *Local Incidence of Cancer in France in Relation to Fuel. C. E. Green.
14 Sanatorium Treatment in Pulmonary Tuberculosis and Its Results. J. Guy.
15 Two Cases of Otitic Extradural Abscess. J. S. Fraser.
16 Case of Generalized Vaccinia. R. C. Low.

13. **Local Incidence of Cancer in Relation to Fuel.**—A very careful inquiry was made by Green as to the relation to cancer of coal, charcoal and wood in France. In nearly all the town districts of France coal is largely used. Wherever coal is exclusively burned the death rate is invariably very high, as is the case also in which charcoal is burned. The fact that charcoal seems to be as dangerous as coal is not surprising, when it is borne in mind that in the Kangri basket, which undoubtedly causes malignant tumors in the natives of Kashmir, the fuel used is charcoal. On the other hand, in cases in which wood is burned exclusively, the death rate is very low. The country death rate is even more striking. In the north the death rate in the country districts almost approximates that of the town. In certain of these districts the country death rate is actually higher than the town. The explanation of this is, to Green's mind, the simple one that cases in which coal is burned, as it often is in country districts, on hearths and in grates which were originally built to burn wood, the elimination of the products of combustion of the fuel is much less effective, and the results are correspondingly deleterious. In cases in which coal and wood are burned the death rate is about the average. In cases in which wood alone is burned the death rate is much below the average in some cases.

Green is convinced that the character of the fuel used in any particular district has a profound effect on the incidence of cancer. Cancer seems to be practically non-existent in some purely peat-burning districts in Scotland, whereas the death rate is almost invariably high wherever coal is burned. It is very prevalent in certain districts in Orkney in cases in which nothing but peat was burned, but this peat contains nearly 1 per cent. of sulphur, and is coal-like in character. Some other element than the strictly sulphur content may be involved in the relationship of certain fuels to the cancer death rates of the districts in which they are used; some chemical condition of the fuel, its ash or its other products of combustion may be responsible, but the results of such inquiries as Green has made into the fuel conditions of those districts in which cancer is rife seem to point conclusively to the fact that etiology of malignant disease has some subtle connection with fuel and its products of combustion, a connection which lies somewhere about the difference between wood and charcoal.

Glasgow Medical Journal

January, LXXXIII, No. 1, pp. 1-79

17 *Leper Houses and Medieval Hospitals. C. A. Mercier.
18 Rejections Among Recruits. J. Fergus.

17. Also in *Lancet*. See THE JOURNAL, January 30, p. 471.

Lancet, London

January 9, I, No. 4767, pp. 59-114

19 *Communication Between Two Ventricles of Heart Occupying an Unusual Situation. T. W. Griffith.
20 Some Conditions that Simulate Chronic Appendicitis. J. Morley.
21 *Pneumoperitoneum Following Resection of Carcinomatous Rectum, Evacuation of Gas and of Pelvic Abscess. Recovery. J. D. Malcolm.
22 Osteoplastic Resection of Skull in Decompression Operations of Brain. S. Mort.
23 Third Outbreak of Epidemic Poliomyelitis at West Kirby. G. Jubb.
24 Arteriovenous Aneurysm of Femoral Vessels, Following Bullet Wound Through Left Thigh. W. M. Willis.
25 *Value of Tuberculin as an Addition to Sanatorium Treatment. N. D. Bardswell.

19. **Communication Between Ventricles of Heart.**—The communication in Griffith's case was between the conus arteriosus or infundibular part of the right ventricle on the one hand and the aortic vestibule on the other. The heart was enlarged and weighed 19½ ounces.

21. **Pneumoperitoneum Following Resection of Carcinomatous Rectum.**—An ulcerated tumor in the posterior wall of the rectum was removed by a combined abdominal and peritoneal method. The bowel was divided above the new growth, and both ends were closed. The rectum, with as much pelvic fat as possible, was separated and everted through the anus. The projected mass was then cut off between the growth and the internal sphincter. The remaining part of the rectum was held in its everted position by forceps, and through it the lower end of the mobilized sigmoid flexure was brought down. This was opened, and the bowel ends were united by interrupted sutures and replaced in the pelvis. The union was considered so accurate that Mayo's recommendation to drain the pelvis through an incision behind the anus was not followed. After the operation the highest temperature was 100 F., the bowels acted, and no unfavorable sign was noticed until the sixth morning, when the abdomen was distended. The bowels never failed to move when laxative medicine was given, and there was no vomiting, but the distention rapidly increased, and on the ninth day it was very great, the abdomen being tense and tympanitic all over and the pelvic floor being pushed down. The temperature was 99.2, the pulse rate was increasing, but only 118 and of fair volume. Respiration was not greatly distressed, and the general condition was alarming only because of the increasing distention.

The abdomen was reopened and its anterior wall immediately fell with a flop on the intestines, which occupied a small space. A large quantity of gas escaped, and an absence of odor was observed. The exposed part of the peritoneal sac contained no fluid, and its serous surface was very pale and showed no sign of inflammation. The intestines were not adherent except in the pelvis, in which all the parts were matted together. On separating these many ounces of offensive pus were released. The abscess cavity, which contained no free gas, was drained through the lower end of the incision, the remaining part of which healed by first intention, and no further accumulation of gas took place. After drainage of a secondary collection of pus through an incision in the right groin the abscess healed slowly and otherwise recovery was uninterrupted.

25. **Tuberculin in Treatment of Tuberculosis.**—From October, 1911, to May, 1913, tuberculin was given to 154 patients at King Edward VII sanatorium by Bardswell. One hundred and thirty had tubercle bacilli in their sputum; the remaining twenty-four patients had not. The results among the patients showing bacilli were as follows: Much improved, 64.6 per cent.; improved, 17.7 per cent.; stationary or worse, 17.7 per cent.; lost bacilli, 32.3 per cent. While the use of tuberculin has had no appreciable effect on the general results, as regards the loss of bacilli Bardswell says there has been an appreciable difference, 5 per cent. more patients having been discharged free from bacilli than in former years. The greatest improvement is seen in the group of moderately advanced cases, the figures for loss of bacilli having risen from 17.8 to 25.6 per cent. a significant increase, since this group includes the majority of the patients.

Practitioner, London

January, XCIV, No. 1, pp. 1-178

26 Theory of Internal Secretion: Its History and Development. E. Gley.
27 Physiology of Thyroid. H. H. Dale.
28 Thyroid Insufficiency. E. Hertoghe.
29 Endemic Goiter. R. McCarrison.
30 Exophthalmic Goiter. L. Williams.
31 Parathyroid Glands. A. F. Hertz.
32 Physiology of Chromaffin. D. N. Paton.
33 Suprarenal Glands. T. R. Elliott.
34 Pluriglandular Insufficiency: Its Incidence and Treatment. H. R. Harrower.
35 Functions of Pituitary Body. S. Vincent.

Sei-I-Kwai Medical Journal, Tokyo

December, XXXIII, No. 12, pp. 73-81

36 *Abortive Treatment of Typhoid and Paratyphoid. S. Ichikawa.

36. **Abortive Treatment of Typhoid and Paratyphoid.**—Ichikawa obtained remarkably good results with the intravenous injection of typhoid vaccine in eighty-seven cases of typhoid and paratyphoid. The vaccine was manufactured as follows: Ten platinum wire loops of a young culture of typhoid bacillus is mixed with 10 c.c. of serum from a few typhoid patients who are in the convalescent stage. It is kept in the incubator for five to six hours. Then it is centrifugalized and the bacilli are dissolved after washing three times in 100 c.c. of physiologic salt solution which contains 0.3 per cent. of phenol shaken thoroughly for one hour. Heating is to be avoided. The vaccine is well shaken before it is used, and then about 0.5 c.c., diluted with warm physiologic salt solution, is slowly injected into the median basilic vein, taking about two minutes.

Intestinal hemorrhage as an irritative symptom was noted in a few cases one to three days after the injection. However, the frequency of the intestinal hemorrhage was less than in those patients who did not receive the injection, and the hemorrhage was in most cases less in quantity. In two patients who had had intestinal hemorrhage previously, further hemorrhage was not observed. Beside the intestinal hemorrhage, Ichikawa observed two cases of hemoptysis, one case of epistaxis and two cases of cutaneous hemorrhage; all the hemorrhages were quite slight and never recurred. He claims that typhoid and paratyphoid can be abortively cured by intravenous injection of vaccine made by sensitizing the living typhoid bacillus with the serum of typhoid patients in the convalescent stage.

Bulletin de l'Académie de Médecine, Paris

December 22, LXXII, No. 41, pp. 417-431

37 Colloidal Gold in Intravenous Treatment of Typhoid; Forty-Two Cases. M. Letulle.

Presse Médicale, Paris

December 3, XXII, No. 78, pp. 705-720

38 *Typhoid and Paratyphoid Fever; Prophylaxis and Treatment. L. Landouzy.
39 *Morphin as Obstetric Analgesic. G. Bertrand.
40 Localization of Projectiles in the Tissues. (Repéreur Marion-Danion.) G. Marion.
41 Salvarsan Intravenously in Treatment of Gangrenous Wounds. P. Ravaut.
42 *Preventive Treatment of Tetanus by Early and Thorough Sterilization. Chaput.

December 10, No. 79, pp. 721-728

43 *Importance of Early Treatment of Paroxysmal Tachycardia. H. Godlewski.
44 The Arrangements for Care of the Wounded at the Front. (Trois mois de campagne. Service de santé de l'avant.) G. H. Lemoine.
45 *Epinephrin in Treatment of Cholera. Naamé.

December 17, No. 80, pp. 729-740

46 *Antityphoid Vaccination of the Public. (Vaccinations publiques contre la fièvre typhoide.) G. Maurange.

38. **Typhoid and Paratyphoid Fever Among the Troops.**—Landouzy remarks that the dread of the appearance of typhoid among the French troops proved only too well founded as a whole series of *endémies typhisantes*, as he calls them, developed along the eastern and northern line before the decree rendering vaccination against typhoid compulsory in the French army went into effect October 1. But the paratyphoid bacilli B. were found in the blood instead of typhoid bacilli in about a sixth or eighth of the cases or even oftener. In certain corps the infections numbered about the same for each, and in one corps out of twenty-five specimens of blood all but three developed cultures of the paratyphoid B. bacillus. He describes the clinical pictures of this infection and of "trench diarrhea" in general. It may induce a syndrome deceptively like true typhoid and very serious, or a subacute jaundice, or a syndrome suggesting dysentery or cholera or acute poisoning—all these may be induced by the paratyphoid bacillus. Treatment of both typhoid and paratyphoid can be only symptomatic, with special care to keep the heart working well. He reiterates that keeping the mouth and skin clean, changing the linen in a typhoid ward, etc., require more constant attention and devoted expert service than a ward full of wounded, while all entering the ward are exposed to greater dangers. After recovery, the heart, the liver, the kidney, the spine or the brain may be left irreparably damaged, so that persons contracting typhoid, paratyphoid or other infection in war may be left internally crippled as much as the lame, the halt and the blind cripples from external wounds.

Landouzy adds that when persons inoculated against typhoid develop what seems to be typhoid later, it will almost inevitably be found to be of paratyphoid origin. He encountered recently a case of this kind in a nurse who had been vaccinated against typhoid. Paratyphoid bacilli were cultivated from her blood when she was taken sick later with what seemed to be true typhoid. Landouzy urges therefore parallel vaccination against paratyphoid infection as the only means to stamp out the endemo-epidemic that has swooped down on the army at the front. The troops in the trenches are peculiarly exposed to these infections on account of the proximity of dejecta and the frequently polluted drinking water, to say nothing of the exhaustion from privations of all kinds.

39. **Morphin in Obstetrics.**—See editorial in The Journal, Dec. 19, 1914, p. 2233.

42. **Preventive Treatment of Tetanus.**—Chaput concludes from what he has observed in the numerous cases of tetanus he has encountered that the tetanus germ develops most readily in compact connective tissue and aponeurosis tissue, especially when gangrene is setting in; also in regions with numerous nerves as the nerve sheath is likewise a compact connective tissue. These conditions are realized most perfectly in the hand and the foot, and hence in the hands and feet, and in other regions with numerous nerves, the wounds require more thorough sterilization to ward off tetanus than injuries elsewhere. As gangrenous tissues offer a peculiarly favorable soil for tetanus germs, all such tissues should be carefully removed and all crushed tissues liable to become gangrenous. Most disinfectants have but a briefly transient action, but iodoform keeps generating iodin through days and weeks, and this is the main reliance in treating wounds liable to generate tetanus. The wound can be dusted thick with it and iodoformed wicks carried down in the depths. After forty-eight hours the mischief is done, as a rule. If iodoform is not tolerated, zinc peroxid or bismuth can be used instead.

43. **Paroxysmal Tachycardia.**—Godlewski emphasizes that when an attack of tachycardia can be arrested at once it does little harm, but if the heart is left to pound away its strength uselessly, it becomes exhausted and permanent damage may result. He has had two such cases in the last five weeks among the two hundred men in his company. After a fatiguing march on a hot day the men suddenly developed palpitations, the face red but not cyanotic, with distress in the precordial region and furious beating of the heart but no dyspnea. The beat was 140 and the pulse small. The men were given at once a chunk of bread, the size of a large nut, which they were told to swallow whole with a little water. The pulse dropped immediately to 78 and 70 and all disturbance was at an end. The cases were alike in every particular, as also the benefit from swallowing the chunk of bread a

few minutes after the onset of the attack. His explanation of the benefit from this simple measure is that the terminals of the pneumogastric nerve in the esophagus are irritated by the stretching of the esophagus as the large chunk of bread is swallowed whole, and this irritation seems to act on the whole pneumogastric system and modify its functioning so that it forgets to keep up the tachycardia phenomena, and conditions right themselves.

45. **Epinephrin in Cholera.**—Naamé shows by analysis of the symptoms of cholera that most if not all of them can be explained by an elective action on the suprarenals from the cholera toxins. There is a striking analogy between the cholera syndrome and the symptoms from defective functioning of the suprarenals. In short, he declares, cholera must be regarded as a *hypoépinéphric toxinique* and the logical conclusion is to treat it with the suprarenal extract which the suprarenals are no longer able to produce for themselves. The first stage of cholera, the bacillary invasion, runs its course in the intestines and is comparatively harmless. As the toxins generated act on the suprarenals and paralyze them, the dangerous second phase develops. The remarkable tolerance of cholera patients for epinephrin proves, he says, that it supplies a much needed active principle. He injects it subcutaneously in doses of 4 or 6 mg. in the twenty-four hours, keeping it up for several days, supplemented by saline infusion. Owing to the injury from the much-damaged condition of the suprarenals, the body is unusually sensitive to poisonous substances and hence, he declares, cocain, morphin and similar drugs should never be given in cholera and the patient should not be taken away from the spot. Epinephrin has not only a symptomatic action, combating the vomiting, diarrhea, cramps, abnormally low blood-pressure and chilliness, but it acts directly on the primary cause, having a manifest action both on functioning and on the germs.

46. **Vaccination Against Typhoid at Paris.**—Maurange has been urging the people of Paris not to wait for an epidemic of typhoid but to allow prophylactic vaccination, the same as is now compulsory in the French army. The newly organized service of gratuitous vaccination has been visited now by 5,100 persons and 13,800 injections have been made. The office is open every day for registering, and eight questions are asked each applicant, present health, typhoid, scarlet fever, pleurisy at any time, recurring bronchitis or bowel trouble, and whether there is albuminuria at present. In case of doubt, the urine is examined and the lungs ausculted, and all suspects are advised to abstain from the antityphoid vaccination. The vaccinating office is open four times a week for two hours, and the applicant's numbered card is compared with the register and the record of the previous reactions. The reaction is slight and transient; only very rarely are there still traces of it next day.

Archiv für Verdauungs-Krankheiten, Berlin

December, XX, No. 6, pp. 617-732

47 *Tetany from Thickening of the Blood. (Zur Aetiologie der Tetanie.) G. Rosenfeld.
48 *Concrements in the Pancreas. (Zur Kenntnis der Lithiasis pancreatica.) M. Rosenthal.
49 *Esophagoscopy. (Neue Gesichtspunkte für die moderne ösophagoskopische Technik.) W. Sternberg.
50 *Causes of Chronic Constipation. (Zur Pathogenese der chronischen Obstipation.) F. W. Hopmann.
51 *Harmlessness of Putrefaction Processes in the Intestines. (Darmfäulnis.) A. Rodella.

47. **Etiology of Tetany.**—Rosenfeld reports a case in which tetany developed with the exactness of a laboratory experiment when the blood became much concentrated, and then subsided as fluids were supplied to dilute the blood. The patient was a man of 34 with cicatricial stenosis of the pylorus and all disturbances ceased after a gastro-enterostomy, but in the meanwhile the man had lost so much fluids from excessive vomiting that the intake of water by proctoclysis was not sufficient to dilute the blood, and the tetany came on. More fluid was then allowed to run into the rectum and the tetany subsided. The next day it was the intention to give intravenously 1.5 liter of 0.6 per cent. salt solution and by proctoclysis 50 gm. of sugar in the water in the irrigator. By mistake the sugar was dissolved in the salt solution and the whole infused into the vein. The tetany came on again as the infusion was in progress, but yielded anew to more copious intake of fluids. In this case there was no question of auto-intoxication from the stomach trouble and nothing to indicate deranged internal secretion. The loss of fluids in the excessive vomiting caused such inspissation of the blood that tetany resulted. The tetany subsided each time as the deficit in fluids was made up.

48. **Pancreas Lithiasis.**—Rosenthal comments on the rarity of concrements in the pancreas, only about seventy cases being known. At necropsy of a man of 21 who had succumbed to pulmonary tuberculosis, he found the pancreas packed with stones, five of them as large as a hazelnut. There had been no symptoms of diabetes in this case, which fact Rosenthal explains by the finding that most of the islands of Langerhans were apparently normal, enough having been left uninjured by the presence of the concrements to attend to their task in regard to carbohydrate metabolism. This explains why in nearly all the cases of pancreas lithiasis on record the discovery of the stones was an operative or necropsy surprise. In the thirty-two cases in the literature in which the age and sex were mentioned, twenty-six were males; the youngest patient was a boy under 10 and the oldest two men nearly 75. Obstruction of the outlet alone cannot be the cause of this form of lithiasis as otherwise it would occur more frequently in the many cases of obstruction, and it would be possible to reproduce the lithiasis in animals, which has never yet been accomplished.

49. **Improved Technic for Esophagoscopy.**—Sternberg gives an illustrated description of the instruments he uses for esophagoscopy, commenting on the advantages of a tube not longer than 18 to 25 cm. with an inner tube which can be pushed farther in.

50. **Various Causes of Chronic Constipation.**—Hopmann, in a series of twenty cases, investigated the mode of life, the diet, the drugs previously taken, the state of mind, preceding diseases, studying further the heart, the liver and stomach, and examining the rectum and sigmoid flexure by palpation and direct visual inspection, and classifying the cases according to the Roentgen-ray findings. In fourteen of the twenty cases the feces were found accumulated in the cecum and ascending colon after eighteen and twenty-four hours. They were finally voided in two or three days; first came a hard lump and then soft stool, all containing mucus. In four other cases the feces were not voided for from four to seven days and then they came as small hard lumps, without mucus admixture, but when a loosening diet and a mild purgative were given, the stools contained microscopic mucus. He cites these details as evidence that in every case there was some catarrhal trouble in the cecum or ascending colon and possibly also in the small intestine. The mucus admixture in the cecum and ascending colon may interfere with the normal process of absorption of fluids from the feces in this region. The symptoms with this type of "ascending constipation" are the same as with the syndrome ascribed to spastic contraction of the bowel, the so-called "spastic obstipation." It thus seems evident that this syndrome is in reality merely the result of catarrhal conditions in the cecum or small intestine or both.

In conclusion Hopmann reiterates that nothing in all the experiences related confirms the assumption of nervous influences as directly responsible for chronic constipation.

51. **Pathogenic Stools.**—Rodella's further experimental and clinical experience at his private sanatorium at Venice for derangement in the digestive system and metabolism has apparently confirmed anew his previous assertions in regard to the comparatively harmless nature of the products of intestinal putrefaction. Animals were injected with extracts of stool from young and old, the sick and the healthy. Stool from the febrile with intestinal affections always killed the animals inoculated with an extract of it, while other animals bore without the least apparent harm

injection of extracts from dyspeptic and diarrheic stool if it came from the afebrile. In all his experiments there was no correspondence between the extent of the putrefaction processes and the toxicity of the stool extract. Everything seemed to indicate that the putrefaction products are very little if at all pathogenic. Even 10 c.c. of putrid albumin could be injected subcutaneously in a rabbit with scarcely any disturbance, while the same amount of stool proved always toxic, and if 10 gm. of an extract of diarrheic stool was injected, the animal inevitably succumbed.

This method of injecting the animal directly with an extract of the fresh stool is much simpler and more instructive, he declares, than first isolating the bacteria and then injecting the animal with the bacteria. This direct-extract method has revealed that the stools of infants are far more toxic for laboratory animals than the stools of adults. Even in healthy children the extracts of their stools manifestly contain pathogenic bacteria in larger numbers and of greater virulence than in extracts of adults' stools. This throws light on the more serious consequences of intestinal derangement in children, as compared with adults, especially in acute infectious disease. As adults eat food that is generally cooked and thus sterilized, and as they practice hygiene of the mouth, very few micro-organisms, comparatively speaking, are swallowed, and these are mostly destroyed by the powerful digestive juices. Most of the bacteria which get into the bowel are of the putrefaction-producing group, and these have been found to be only slightly, if at all, pathogenic. In infants the digestive juices are weak and the infant intestine is more sensitive and develops catarrhal conditions more readily than the adult. The products of the catarrhal condition are liable to ferment and generate toxic substances that promote in turn the growth of pathogenic micro-organisms which under other conditions are crowded out by the saprophytes. By inoculation of animals with extract of the stools it is possible to discriminate between the pathologic and the non-pathologic cases and institute treatment accordingly. The inoculation of animals is liable further to reveal the presence of tubercle bacilli in the stools, which is a matter of great import for both treatment and for prevention of the spread of tuberculosis. He mixes 1 gm. of the stool with 5 c.c. of sterile water and injects the whole subcutaneously in a rabbit.

Beiträge zur klinischen Chirurgie, Tübingen

XCIII, No. 2, pp. 223-486. Last indexed Oct. 10, 1914, p. 1330

52 *Dog Healthy Six Years after Transplantation of Left Kidney into Inguinal Region and Right Nephrectomy. J. H. Zaaijer (Leiden).
53 *Multiple Polyps in the Stomach. (Polyposis ventriculi.) H. Heinz.
54 *Causes and Treatment of Prolapse of the Rectum. A. Ach.
55 Rupture of the Kidney from Contusion. (Subkutane Nierenrupturen.) A. Ach.
56 Operative Treatment of Movable Kidney. (Wanderniere.) A. Ach.
57 Technic for Operating on the Enlarged Thyroid. (Kropfoperation.) A. Ach. (*Zur operativen Behandlung zweiseitiger Strumen.*) W. Pettenkofer.
58 Spontaneous Subsidence of Traumatic Aneurysm in Axillary Artery. F. Genewein.
59 *Slitting the Sternum to Relieve Pressure on the Lower Air Passages. (Die dekompressive Thoraxsprengung durch longitudinale Sternotomie bei die Luftwege komprimierendem Aneurysma und Tumoren des Mediastinums.) P. L. Friedrich.
60 *Damage of Endothelium of Pleura at Operations and with Artificial Pneumothorax. H. Boit.
61 *Blocking the Brachial Plexus; 110 Cases. (Anesthesierung des Plexus brachialis nach Kulenkampff.) H. Boit.
62 Aneurysm of the External Carotid Artery Simulating Tumor in Tonsil Region. M. Jastram.
63 Influence of Resection of Phrenic Nerve on Experimental Pulmonary Tuberculosis. W. Carl.
64 *Acute Dilatation of the Stomach. (Akute atonische Magendilatation.) R. Linke.
65 Internal Hydrocephalus. W. E. Dandy and K. D. Blackfan (Baltimore).

52. **Transplanted Single Kidney.**—Zaaijer does not know of any other instance of six years of adequate kidney functioning by a transplanted single kidney. After the left kidney had been transplanted into the inguinal region, the renal vein sutured to the femoral and the renal artery to the femoral artery, the ureter implanted in the bladder, the urine for a time was blood stained. The plaster dressing was removed the eighteenth day as the wound had healed. Eighty-three days after the transplanting had been done the right kidney was removed through the back. This was in 1908, and the illustrations show the healthy dog six years later and the outlines of the kidney evident in its flank. It does not seem to have altered in size or consistency. The dog ran away once, but turned up again later, always in good health and spirits.

Zaaijer calls special attention to the technic with which he implanted the ureter in the bladder, as the six years of successful function confirm its value. The ligated ureter stump is fastened loosely to the bladder with three stitches which do not include the mucosa. The threads are left loose and the stump of the ureter is carried into the bladder, held in small artery forceps, through a minute incision in the bladder wall. The forceps are pushed in until they cause the opposite wall to protrude. A minute incision is made here and the stump of the ureter is pulled through by the ends of the thread with which it had been ligated. Then the threads fastening the ureter to the first bladder wall are tied. The outer stump of the ureter where it projects from the opposite wall is cut off just inside of the ligature, and the purse-string suture, previously taken around the incision, is drawn up as the outer stump, no longer held by the ligature threads, slides back inside the bladder. Zaaijer has applied this technic in sixteen rabbits also, confirming the advantages of this method. The ureter thus is not opened until the last moment.

53. **Polypous Proliferation of Stomach Mucosa.**—Heinz' patient is a man of 35, healthy until 1909 when he began to experience sensations of oppression in the stomach region, and nausea. The symptoms came on four or six hours after meals and subsided after eating. The Roentgen rays showed polyposis confirmed by an operation, at which several of the polyps were excised. In 53 cases of polyposis of the intestines on record, as compiled by Versé, the stomach was involved likewise in 5 but in none of the cases was the stomach the exclusive seat of the polyposis. Heinz has found a very few cases of this in the literature. The pylorus region is the one generally involved, and the patients are nearly always comparatively young. In the elderly the polyposis is usually accompanied with cancer. Heinz' patient was at first freed from disturbances and gained in weight, but the anemia is still so pronounced that the assumption of polyposis in the intestines or malignant disease seems justified at present.

54. **Prolapse of the Rectum.**—Ach discusses the various factors involved in production of prolapse of the rectum, especially the tendency to paresis of the rectal walls common in lean men subject to obstinate constipation or who have passed through typhoid or dysentery. Women also are particularly liable to prolapse of the rectum during repeated pregnancies or the menopause when there is a general tendency to hernia. In children, chronic catarrhal bowel trouble induces a predisposition by weakening the rectal walls, as also by the excessive straining at stool. Prolapse of the rectum is in reality first a hernia of the floor of the pelvis into the rectum. Treatment should be based on this pathogenesis. The simpler methods might be tried first, especially for children, massage, paraffin, or Thiersch's silver wire method. The various operative technics are described and compared, and Ach then illustrates a method he has applied in two cases with excellent outcome. The rectum is brought into normal shape by a strip taken from the fascia lata. The strip is 25 cm. long and 8 cm. wide and one end is slit about a third of the length of the strip. One of the slit ends is brought nearly around the rectum, to which it is sutured. The other end is sutured to the other side of the rectum and to the upper half of the vagina. The broad end of the strip is then drawn up as high as possible and fastened to Cooper's ligament.

59. ***Decompression Slitting of the Sternum.***—Friedrich not only divided the sternum its entire length, but cut out the bone each side of the slit. The first patient thus treated

had an aneurysm of the innominate artery and the relief from the lengthwise opening made in the sternum was astonishing, but the patient, a man of 47, succumbed to preexisting pneumonia. In a boy of 12 and a girl of 16 with a large tumor in the mediastinum, slitting the sternum in this way relieved the severe symptoms and permitted partial removal of the tumor. A gap of 3 cm. was left in each case, and there was no further cyanosis or dyspnea, not even as the tumor in one case continued to grow. Both patients have been treated since with Roentgen exposures and the tumors have materially retrogressed and the general health improved. In another case the thorax wall had lost so much of its elasticity in the man of 57 that merely slitting the sternum failed to relieve, and the bone on each side had to be cut away to leave a gap wide enough to be of any benefit. The tumor was a sarcoma.

60. **Damage to the Pleura with Operations and Artificial Pneumothorax.**—Boit emphasizes the importance of the phagocytosis and the bacteria-destroying properties of the endothelium of the pleura. When this is damaged in operations or by injection of a gas, the organism thus loses an important means of defense.

61. **Blocking the Brachial Plexus.**—Boit has applied Kulenkampff's technic over 200 times on patients ranging from 6 to 77 years of age. There is no doubt the injection of 10 or 20 c.c. of the 2 per cent. solution of the anesthetic for the purpose causes toxic or traumatic injury of the plexus, although it may be minimal. If the nerve is already pathologic, the effect is naturally felt more than by a healthy nerve. In his own 110 cases there were two failures requiring general anesthesia. He applied this method for all operations on the arms and found it particularly advantageous for reducing fractures and dislocations. The muscles of the arms become relaxed under it, as is observed otherwise only under deep general anesthesia. The phrenic nerve on the same side is temporarily paralyzed by the procedure, as can be seen by roentgenoscopy, but he never observed any tendency to dyspnea except in three instances. The conditions in these cases seemed to indicate that the phrenic nerve had been directly injured by the needle in seeking the plexus. The needle should never be introduced nearer to the median line than the first rib.

64. **Acute Dilatation of the Stomach.**—Linke analyzes 173 cases he has found in the literature, out of 200 on record. Only 78 of the 173 patients recovered, including 57 of the 105 postoperative cases and only 21 of the 68 non-operative, in which emaciation, mental disease or cachexia was evidently a factor. The atony and dilatation are functional, paresis of the gastric musculature being the cause of the acute dilatation. He describes 3 cases personally observed. The sudden explosive vomiting, collapse and enormous dilatation of the stomach proved fatal in 2 of the 3 cases, notwithstanding free use of the stomach tube. One patient had advanced heart disease, and conditions found at necropsy in the other suggest that placing the patient prone or in the knee-elbow position might have brought relief, as it did in the third case, in which it evidently helped to save the patient. This makes the twenty-eighth case on record, he says, in which turning the patient face down seemed to correct conditions at once. Prophylaxis is the main thing, Linke remarks, in conclusion, and the bearing in mind of the possibility of this contingency so that the diagnosis may not come too late.

Berliner klinische Wochenschrift

December 21, LI, No. 51, pp. 1929-1952

66 Wounds of the Nervous System. (Die Kriegsverletzungen des Nervensystems.) M. Lewandowsky.
67 Deviation of Complement in Syphilitic Serum. (Zur Bewertung der hämolytischen und hamolysehemmenden Funktion syphilitischer Sera.) E. Nathan.
68 Toxic Injury of Parenchymatous Organs in Early Syphilis. (Die parenchymatós-toxischen Wirkungen des Syphiliscontagiums bei visceraler Frühsyphilis und Taboparalyse.) A. Buschke and M. Michael.
69 Antisepsis in Prophylaxis of Epidemic Disease. (Kriegsseuchenbekämpfung durch klinische antiseptische Maasnahmen.) H. Friedenthal.
70 Roentgen Findings with Insufficiency of Ileocecal Valve. E. Marcuse.
71 Improved Technic for Localization of Bullets. (Die Röntgensekundarstrahlenblende als Hilfsmittel für die Lokalisation von Geschossen, demonstriert an zwei Herzschüssen.) G. Bucky.
72 Severe Roentgen-Ray Burn after Gynecologic Deep Exposures. (Fall von schwerer Röntgenverbrennung nach gynäkologischer Tiefenbestrahlung.) G. Bucky.
73 Psychopathology in Dostojewski's Novel. (Die Brüder Karamasow.) A. Münzer.

December 28, No. 52, pp. 1953-1968

74 Bilateral Asymmetry of the Human Body. F. Wachsner.
75 Wrist Watch Driven into Arm by Bullet. (Verwundungen durch indirekte Projektile.) E. Melchior.
76 *Symptoms of Intoxication after Prophylactic Injection of Antitetanus Serum. F. Boenheim.
77 Apparatus to Measure Amount of Blood in the Living Body. (Zur Bestimmung der Blutmenge im lebenden Organismus.) J. Plesch.
78 *Staphylococcus Sepsis with Aplastic Anemia Following Gonorrhea. A. Buschke and H. Hirschfeld.
79 Combination of Multiple Sclerosis with Poliomyelitis? E. Loewy.
80 *Diagnosis of Appendicitis. C. ten Horn.

76. **Intoxication After Antitetanus Serum.**—Boenheim injected in prophylaxis subcutaneously 3⅓ c.c. of the serum, representing 20 units. There was considerable itching at the spot, and this increased until at the end of the week the pruritus over the entire body became so intolerable that the man had to be given morphin. There was also urticaria; the pulse was small, the temperature subfebrile, and there was at one time a brief syncope and attack of weakness. The morning after the morphin had been given (0.04 gm. in the course of the day) the pruritus disappeared entirely, but severe pains developed then in the bones and muscles and there was great weakness. The symptoms improved in the next four days till nothing was left but weakness in the muscles of the calves. A marked but not durable subsidence of the pruritus was noticed after the bowels had moved freely, a hint to be utilized in treatment of toxic pruritus.

78. **Sepsis Following Gonorrhea.**—The man developed multiple joint trouble soon after acquiring gonorrhea, and then staphylococcus sepsis developed, fatal in less than three months after the venereal infection. Necropsy revealed acute nephritis, an abscess in the right lung, the marrow in the long bones yellow and containing staphylococcus. The blood was of the severest aplastic type.

80. **Early Diagnosis of Appendicitis.**—Ten Horn reiterates his former assertions in regard to the diagnostic importance of pain in the region of the diseased appendix when the right spermatic cord is pulled. If the appendix is much diseased, traction on the left cord also may elicit pain. (See abstract in The Journal, Nov. 21, 1914, p. 1887.)

Deutsche medizinische Wochenschrift, Berlin

December 17, XL, No. 51, pp. 2085-2116

81 Nervous and Mental Disease in the Active Army. (Psychosen und Neurosen in der Armee während des Krieges.) E. Meyer.
82 *Differentiation and Treatment of Gas Phlegmons. M. Busch.
83 Certificates Given by Medical Officers. (Die gutachtliche Tätigkeit des Kriegsarztes.) Reckzeh. Commenced in No. 50.
84 *Improved Differential Medium for Acid-Producing Bacteria. L. v. Liebermann and J. Acel.
85 *Premonitory Stages of Diabetes. (Vorstufen des Diabetes.) P. Bergell.
86 Radium in Treatment of Cancer. W. Rupp.
87 Light in Treatment of Suppurating Wounds. (Zur Lichtbehandlung von eitrigen, jauchigen Wurden.) C. Brill.
88 *Operative Treatment of Flat-Foot. (Zur Bewertung der Nicoladonischen Plattfussoperation.) M. F. Rothschild.

December 24, No. 52, pp. 2117-2140

89 Necessity for Compiling and Comparing Data on Tetanus. (Vorschlag für eine Sammelforschung über Tetanus.) F. Stricker.
90 Wounds of the Larger Blood-Vessels. (Schussverletzungen der grossen Gefässe.) A Kappis.
91 Wounds of the Skull. (Schädelchirurgie im Felde.) E. Erhardt. Commenced in No. 51.
92 *Causes of Respiratory and Heart Failure during General Anesthesia. (Narkosenasphyxie post laparotomiam.) F. Kirstein.
93 Man on Ground Killed by Bullet Missing an Aeroplane. (Seltene Verwendung bei Fliegerbeschiessung:) Marcus.
94 Formaldehyd Prevents Excessive Sweating of the Feet. (Behandlung der Schweissfüsse.) H. Althoff.
95 *Exposure to Sun and Air Aids in Healing of Extensive Suppurating Wounds. (Die Sonnen- und Freiluftbehandlung schwereiternden Wunden.) Backer.

menses, and the women with this intermittent nervous bladder trouble all had retroflexion of the uterus. The disturbances from this premenstrual irritable condition were more pronounced with congenital retroflexion in women who had never borne children than with acquired (*puerperal*) *retroflexion*. The cystoscopic findings are characteristic, especially protrusion and notable congestion of the trigonum or actual inflammation in and around the trigonum, the mucosa in the trigonum region thrown up in folds, sometime edematous. The bladder mucosa elsewhere is of normal aspect. *In every* case of repeated attacks of irritable bladder the connection with menstruation should be investigated and the position of the uterus. He thinks that mechanical factors are responsible for the trouble in question.

Zentralblatt für Gynäkologie, Leipzig

December 19, XXXVIII, No. 51, pp. 1497-1512

135 No Internal Secretion of Uterine Mucosa Demonstrated as Yet. (Zur Frage der inneren Sekretion der Uterusschleimhaut.) S. Aschheim.

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144 *A Peculiar Form of Myoclonia. N. M. Popoff.
145 New Attempts in the Treatment of Deafness. M. V. B. Berezovsky.
146 **Pernicious Anemia.* G. P. Chosroeff. Commenced in No. 26.
147 *Systolic and Diastolic Pressure in Nephritis. I. S. Schwarzman.
148 Treatment of Congenital Hemophilia. S. I. Liokumovich.
149 Malaria in Turkestan. V. L. Yakimoff and N. I. Schochor.
150 *The Clinical Value of Vital Staining of the Granules of the Red Blood Corpuscles. B. Melkich.

144. **Myoclonia.**—Popoff describes a peculiar form of myoclonia which he proposes to call myotonoclonia, as in his case there was a combination of both tonic and clonic muscular contractions. The patient was 19 years old and the trouble began six years before with clonic contractions of the left wrist during voluntary movements. Later on the muscular contractions affected the fingers. Three years afterward tonic muscular contractions developed in the forearm muscles, followed by clonic and tonic contractions in the muscles of the neck, and finally in the flexor muscles of the trunk. The contractures would last for two months and then disappear and return later. The mind was not affected, and no signs of an organic lesion of the central nervous system could be discovered. The patient was drawn over far forward and also showed a tremor, which increased on attempts to straighten up the body. During sleep, lying or sitting, the rigidity and tremor disappeared. The father and a younger brother also showed similar myoclonic disturbances, though without the involvement of the abdominal muscles.

146. **Pernicious Anemia.**—Chosroeff has had thirty-five cases of pernicious anemia without known cause under his care during the last three years. Ten of the cases were studied for many months, with necropsy in three. He differentiates three clinical forms: the chronic intermittent or recurrent form of Türk, the acute form and the aplastic type, with numerous transitional forms. He tried almost every possible method proposed for the treatment of this disease, including drugs, arsenic, iron, hydrochloric acid, etc., dietetic-vegetable diet, then gastric juice, pancreas extract, blood transfusion, splenectomy, etc. His conclusion is that there is no specific remedy for pernicious anemia, but that spontaneous *remissions* are quite common and frequent, *especially* when the patient is no longer young. A method of treatment begun at the time of a beginning remission or when a relapse has reached its end, will give good results, but when used *in* the *beginning* of a relapse there is no *measure* that will prove effectual. These relapses and intermissions have thus nothing to do with the method of treatment. The older the patients, the better they bear the relapses, the younger ones usually *succumbing* during the first or second relapse.

147. **The Blood Pressure in Nephritis.**—In 100 cases of various forms of nephritis, Schwarzman found that the pressure during both systole and diastole was increased in uremic and in acute parenchymatous, interstitial and combined forms of nephritis, the increased blood pressure being not the result, but the cause of the cardiac hypertrophy. The systolic and diastolic pressure may be increased long before any other signs of nephritis, such as urinary changes, etc. The *high* pressure thus *forms* a reliable and early sign of nephritis. The increased blood pressure with nephritis differs from that with cardiac neuroses by being continuous, and by the diastolic pressure being higher than in cardiac or vascular neuroses, with which he never found the pressure over 120 or 130 cm. water (Recklinghaus). With the aggravation of the nephritic process, the systolic pressure sinks because of diminished heart activity and of the increased *diastolic pressure*. The fall of both pressures, occasionally observed in nephritis, is caused by paresis of the vasoconstrictors and failing cardiac power.

150. **Vital Staining of Blood Corpuscles.**—Melkich claims that the granules in the red blood-cells are not due to fixation of the specimen, but indicate merely young normal erythrocytes. Increased numbers of granular erythrocytes indicate an exaggerated but a normal activity of the bone marrow. This is found in all those processes that are connected with increased destruction of red blood cells which decrease in number. The granular erythrocytes greatly decrease in amount, or *even entirely disappear*, in diseases of the bone marrow, and probably also with malignant tumors.

Hygiea, Stockholm

LXXVI, No. 23, pp. 1313-1360

151 *Rupture of the Rectum. (Ett fall av ruptura recti jämte några ord om de s. k. spontana rektalrupturerna.) N. Hellström.

151. **Spontaneous Rupture of the Rectum.**—Analysis of the cases of so-called spontaneous rupture of the rectum has convinced Hellström that the rectal wall was not normal at the point of the rupture. He reviews and compares a number of cases from the literature, only one of the patients recovering; the others succumbed to the consecutive peritonitis. The patient who recovered was a youth of 17, previously healthy until he experienced severe pain at defecation one day, with some bleeding. The operation half a day later revealed a protrusion suggesting a diverticulum, and a rupture above, with diffuse peritonitis. An artificial anus was made to allow the sutured rectal wall to heal, and there was no further trouble. Hellström then relates a fatal case from his own experience; a man of 63 was roused from sleep at night by intense pain in the rectum. The operation ten hours later showed a rupture with smooth edges and no blood in or around it. There was no history of trauma.

Ugeskrift for Læger, Copenhagen

November 12, LXXVI, No. 46, pp. 1971-2006

152 Hermaphrodites *from* Standpoint of Legal Medicine. (Den retsmedicinske Bedømmelse af Hermafroditerne.) V. Ellermann.

December 24, No. 52, pp. 2177-2214

153 *Traumatic Neuroses; *II*: Traumatic Hysteria, Neurasthenia, Simulation, and *Indemnities*. (Om traumatiske Neuroser og deres senere *Forløb samt om* deres Forhold til Erstatningspørgsmaalet.) A. V. Neel. *Concluded* from No. 51.

153. **Traumatic Neuroses.**—The first installment of this article was *reviewed in* these columns January 30, page 476.

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PYORRHEA DENTALIS AND ALVEOLARIS

SPECIFIC CAUSE AND TREATMENT [*]

C. C. BASS, M.D., AND F. M. JOHNS, M.D.
NEW ORLEANS

Pyorrhea dentalis and alveolaris is one of the most prevalent diseases of man. In our studies we have found it present to some extent in more than 95 per cent. of all adults examined. Something of its importance may be suggested by the fact that more than half of all the permanent teeth lost are lost from this disease. Each tooth lost represents a suppurative process in the mouth of at least a few or usually many years. It can hardly be possible that the harmful effect of such a disease is local only. Loss of the teeth alone is an important thing in the life of any individual. We feel quite certain that the great prevalence and importance of pyorrhea alveolaris is not now generally appreciated, even among the medical profession.

The specific cause of pyorrhea dentalis and alveolaris is endamebas.[1] These protozoa have been known for more than fifty years to inhabit the mouth, but the first published expression of opinion that they played an important part in the production of pyorrhea alveolaris was made by M. F. Barrett in collaboration with Allen J. Smith[2] during 1914. We recognized this parasite as the specific cause of the disease and began experimental treatment with emetin without knowing of the work of Smith and Barrett, but at a later date.[3] Recently Smith, Middleton and Barrett[4] have also found *Endameba buccalis* in five out of seventeen cases of diseased tonsils, and they believe this parasite may be pathogenic in these organs.

Our studies now include more than three hundred cases of pyorrhea dentalis and alveolaris. They have been directed to (1) determining the relation of endamebas as the cause of the disease; (2) the nature of the disease process; (3) the influence of emetin and ipecac as a specific remedy against the parasite—especially proper doses, best mode of administration, duration of treatment necessary, and prevention of relapse or reinfection.

ENDAMEBAS AS THE CAUSE OF PYORRHEA DENTALIS AND ALVEOLARIS

Endamebas, chiefly, if not altogether, of the species *E. buccalis,* are demonstrable by proper technic in material obtained from all pyorrhea lesions of sufficient extent to be diagnosed. They are not present in the absence of pyorrhea. They can, however, be demonstrated in material from small lesions that do not extend to the alveolar process, in which one may be unable to recognize the pus without the aid of the microscope. This is the early stage of the disease, more correctly called at that time pyorrhea dentalis, which finally involves the alveolar periosteum and then becomes pyorrhea alveolaris. The endamebas develop and live in the dead or dying tissue at the very bottom of the lesion or pocket. This should be kept in mind in examining for them (Figs. 1, 2, 3, 4, 5, 6, 7).

Material for examination is best obtained by scraping it from the bottom of the pocket with a suitable instrument. A narrow pointed toothpick will do, but a No. 22 Younger dental scaler is the best instrument we have found for general use. The material, which is chiefly pus, and which should not contain very much blood, may be diluted with five or ten times as much normal salt solution on a microscope slide, covered with a cover glass, and examined at once for motile endamebas. The usual high dry lens is suitable. They vary considerably in size and shape (Fig. 8) but with very little experience they are easily recognized. The clear ectosarc may project one or more pseudopodia, draw them back, project others in another direction, or the whole parasite may flow slowly in one direction or another. A pseudopod of ectosarc seems to always precede endosarc when it moves. Granules resembling portions of red blood cells in the endosarc help to give to the parasite an appearance similar to that of *E. histolytica.* The largest of the buccalis are about the size of the histolytica. Stained specimens are perhaps more easily diagnosed, especially by those not very familiar with endamebas. They may be stained by any one of several different methods, but the following is good enough for all ordinary purposes: (1) Spread pus on slide; (2) fix with heat; (3) pour on carbol fuchsin; (4) wash off at once; (5) stain with Loeffler's methylene blue ¼ to ½ minute; (6) wash, dry and examine with oil-immersion lens. With this stain the endo- and ectoplasm are well differentiated and the parasite can be differentiated from the much more numerous pus, epithelial, and other cells present. Their size varies from about three times the diameter of a pus cell down to smaller than pus cells. The large parasites contain in their endoplasm one or more large, dense staining bodies or granules which appear to be the nuclei of pus cells. There is usually a clear zone around each of these, and also around the entire parasite. This is apparently due to shrinkage in drying or fixing the preparation. When stained with this stain the endamebas are darker stained than the pus and other cells in the preparation. In a preparation containing many parasites they can be seen with the low power lens studding the field as blue dots. The constant presence of endamebas in the presence of the disease, and their absence in the absence of the disease, coupled with their situation in the lesions, and finally the coincident rapid recovery of the disease with the disappearance of the endamebas following treatment with a specific endamebacide, serve to establish the parasite as the specific cause beyond reasonable doubt. No more proof of the well-known specific pathogenicity of malaria plasmodia could be obtained until very recently, when we[5] were able to grow the parasite in pure cultures, with which experimental inoculations could be made and Koch's postulates satisfied.

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[*] From the Tulane College of Medicine.

[*] The expense for the large amount of emetin employed in our experiments was defrayed out of a grant from the Committee on Scientific Research of the American Medical Association.

[1] The term endameba is used in place of entameba, proposed by Barbagallo and Casagrandi in 1897, because of clear historical priority first pointed out to us by Dr. Allen J. Smith (personal communication). Endameba was proposed for a parasitic ameba of the cockroach in 1879 by Jos. Leidy (Proc. Phila. Acad. Nat. Sciences, 1879, xxxi, 204) eighteen years before the term entameba was first proposed for parasitic amebas (Ann. d'ig. sper., 1897, vii, 103).

[2] Barrett, M. F.: Preliminary Report, Dental Cosmos, 1914, lvi, 948.

[3] Bass, C. C., and Johns, F. M.: New Orleans Med. and Surg. Jour., 1914, lxvii, 456.

[4] Smith, Allen J.; Middleton, W. S., and Barrett, M. F.: The Tonsils as a Habitat of Oral Endamebas, The Journal A. M. A., 1914, lxiii, 1746.

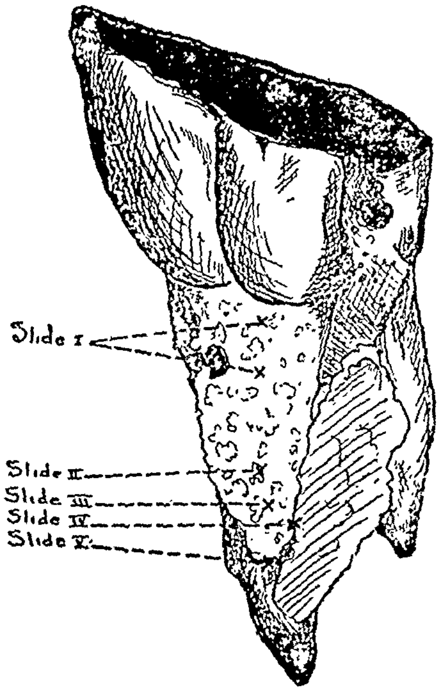

Fig. 1.—An extracted decayed root with site of amebic lesion showing location of the material obtained for photomicrographs.

DESCRIPTION OF THE DISEASE AND THE MANNER IN WHICH IT IS PRODUCED

A tooth consists of the crown (*a* Fig. 9), neck (*b*), and root (*c*). The root is deeply set in its socket in the alveolar process of the jaw bone (*g*). It is held in place by a tough peridental membrane (*d*) which serves as periosteum, covering the root and also lining the socket in the alveolar process. This periosteum is continuous with that (*f*) of the surface of the jaw bone, but it also continues up (*e*) and covers the neck of the tooth.

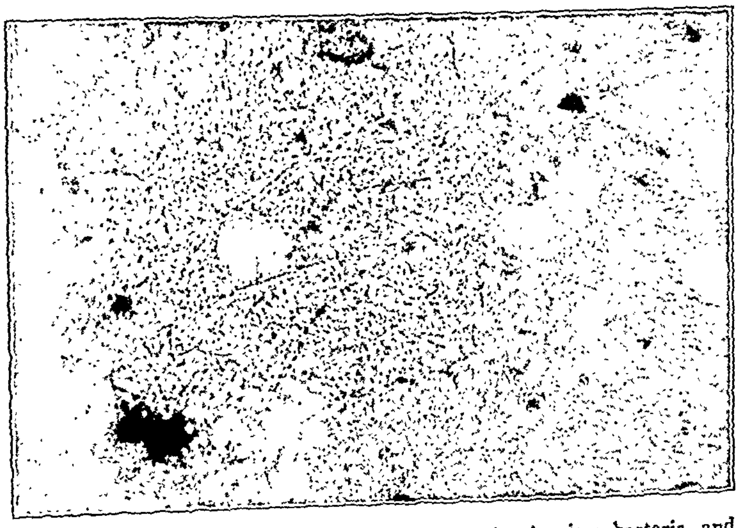

Fig. 2.—Photomicrograph, slide I a, Fig. 1, showing bacteria and débris.

Pyorrhea dentalis and alveolaris affects primarily the dental and alveolar periosteum. Whenever the periosteum is destroyed, of course, ulceration of the soft tissue attached to it occurs. Such ulceration includes granulation, pus formation and the usual tendency to bleed easily. It is not at all probable that endamebas can attack the normal tissue. Damaged tissue is necessary, very likely, and it is highly probable that the injury should furnish a kind of pocket or closed ulcer. These endamebas are not known to live on open surfaces. Any trauma such as wounding the edge of the gum with a toothpick, hard particles of food, etc., or the condition that would result from hard particles being forced between the teeth and making long-continued pressure on the soft tissue, or the pressure of ill-fitting crowns, would offer favorable conditions for establishing the endamebas. Once planted into dead or dying dental periosteum, their natural habitat, they are capable of multiplying and continuing the destructive process with the aid, no doubt, of important secondary factors. Once the infection is established the endamebas thrown off with the pus from the focus serve as a constant source of endamebas in the mouth to infect other suitable lesions whenever produced.

The infection usually begins around the back teeth and exists for months or years before the patient suspects its nature. The interdental soft tissue is most likely to be injured and to be the seat of the closed ulcers favorable for infection; therefore the disease begins there first in most instances. On superficial examination the gum may appear a little swollen or reddened, and extend a little high up between the teeth, but more often nothing abnormal is recognized. The patient may have noticed for months or even years that the gums between certain teeth bleed easily from picking, sucking or brushing them, but this came on so insidiously that nothing is thought of it. By examination with a suitable instrument we find the gum loosened from the tooth to a greater or less extent, and a

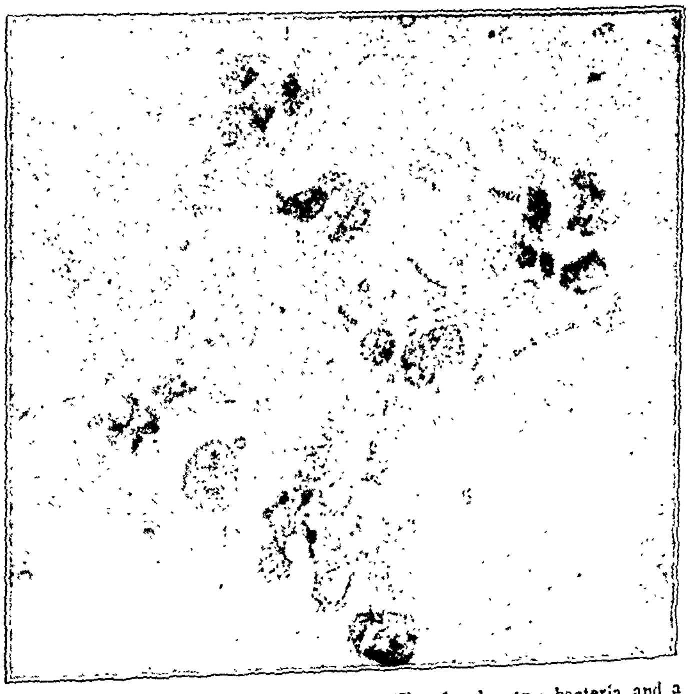

Fig. 3.—Photomicrograph, slide I b, Fig. 1, showing bacteria and a few pus cells.

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[5] Bass, C. C., and Johns, F. M.: Jour. Exper. Med., 1912, xvi, 567.

certain amount of periosteum is already destroyed. Macroscopic or microscopic pus containing many endamebas can be obtained by scraping out the contents of the pocket. Blood usually flows freely, in contrast to what happens if we do an equal amount of trauma to a normal uninfected gum. This is the early stage. Perhaps the destruction of periosteum has not reached the alveolar level.

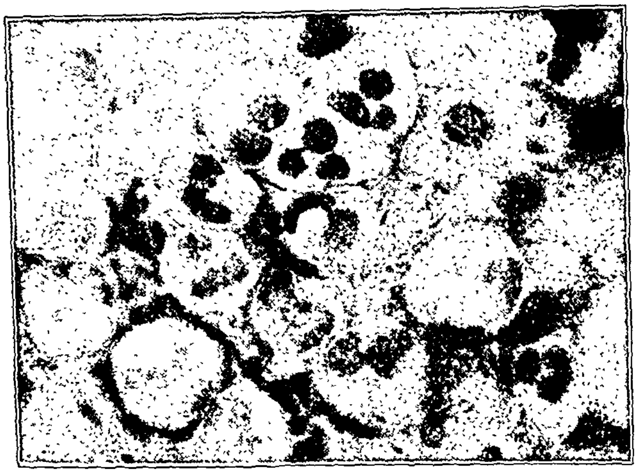

Fig. 4.—Photomicrograph, slide II, Fig. 1, many pus cells, no endamebas. This and Fig. 4 show that the material on the side of the tooth at the indicated places contained comparatively few endamebas.

But the destructive process continues until more and more of the peridental membrane is destroyed, laying bare the root of the tooth and the inside of the bony socket. As the pocket gets deeper and larger there is more and more pus formed. This, no doubt, is very much influenced by decomposition of food that may be forced into it and by the bacterial flora of the mouth. Later the tooth is held only by a small amount of tissue at the bottom of the socket, gets loose, and finally, after years of more or less suppuration, it is lost and the alveolar process, no longer needed to support a tooth, is absorbed. In fact, a great deal of it is removed by the long-continued suppuration to which it has been exposed before the tooth is actually lost. There is more or less soreness, pain, aching and discomfort, and gum boils often form, but the real condition usually is not recognized. The amount of blood lost and of pus produced and swallowed during the several years required for thirty-two teeth lost from this disease to slough or rot out, must be enormous.

We have studied sections and dissections of the diseased tissues in all stages of the disease, and have found the endamebas invariably at the very depth of the lesion. Though some are passing off with the pus, they are many times more numerous in the edge of the living and dying periosteum than in any other place. Figure 1 is a drawing of an old tooth with a pyorrhea pocket on one side, from which we made preparations from different parts and made photomicrographs of representative fields (Figs. 2, 3, 4, 5, 6 and 7). It is seen that though only a few endamebas are present in material from the surface, and consisting chiefly of bacteria, spirochetes and pus, they are present in very large numbers in the edge of the living tissue where Nature is resisting and the destruction is progressing. It should be noticed that this is practically beyond the pus line. What more evidence of pathogenicity do we need?

TREATMENT

Ipecac and its alkaloids, emetin and cephalin, are such perfect endamebacides that nothing better could be hoped for. They have long been employed successfully in the treatment of amebic dysentery, but that disease did not offer such good opportunity to work out dogmatic rules of treatment as the present one does. A given line of treatment can be undertaken, and the effect on the endamebas in the mouth can be watched from day to day or from hour to hour if desired. We have experimented on a large number of patients, watching carefully the effect on the endamebas of different sized doses, different intervals between doses, etc., and feel prepared to lay down fairly definite rules of treatment.

Our experiments with emetin have been limited to its use hypodermatically and later to its use by mouth (internally), with the idea of producing sufficient concentration of it in the body fluids to kill the endamebas in the diseased tissue. We have not tried injecting it into the pockets, or local application, which has been employed with success by Smith and Barrett.[2] We can understand that some particular pocket can be treated locally with as great, or possibly greater, success than by systemic administration of the drug, but if we consider the real condition it would seem that it is not reasonably possible that all the endamebas in all the lesions could be destroyed in this way. When the disease has reached the stage to be recognized by the patient or by the physician or dentist on ordinary examination, it is usually far advanced in one or more places, and there are usually many more lesions or pockets in the earlier stages, all infected with endamebas. We doubt whether one could find all the small lesions in most cases of pyorrhea, much less make local application to them. Certainly it would require long and patient expert work to destroy all the endamebas in the mouth, and that is the object of specific treatment. It would not profit the patient nearly so much to disinfect or cure his bad lesions and leave many small ones to progress and finally get as bad as those that had been cured. It would, in fact, be necessary to

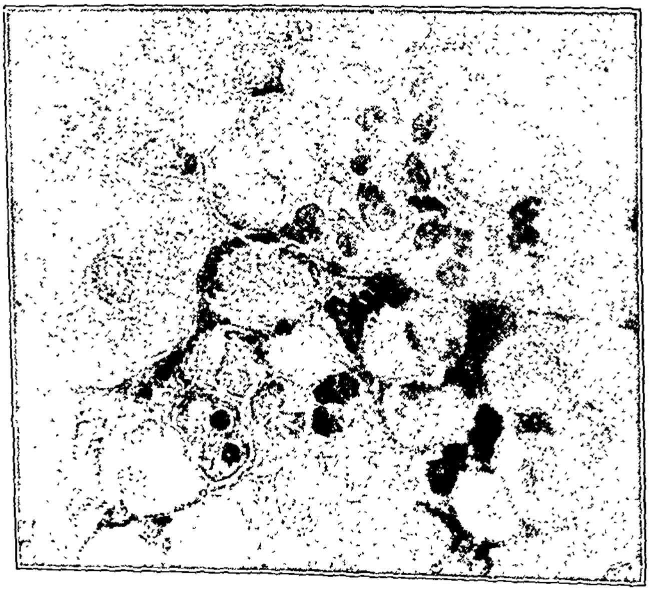

Fig. 5.—Photomicrograph, slide III, Fig. 1. Many pus cells, one endameba.

make applications at frequent intervals until the lesion entirely healed, or else it would be promptly reinfected from the endamebas constantly thrown off from the less extensive lesions. Probably the greatest good to be derived by the patient from the treatment is from saving his teeth that have not lost much of their peridental membrane and supporting alveolar process. The others may be of limited value after the disease is cured.

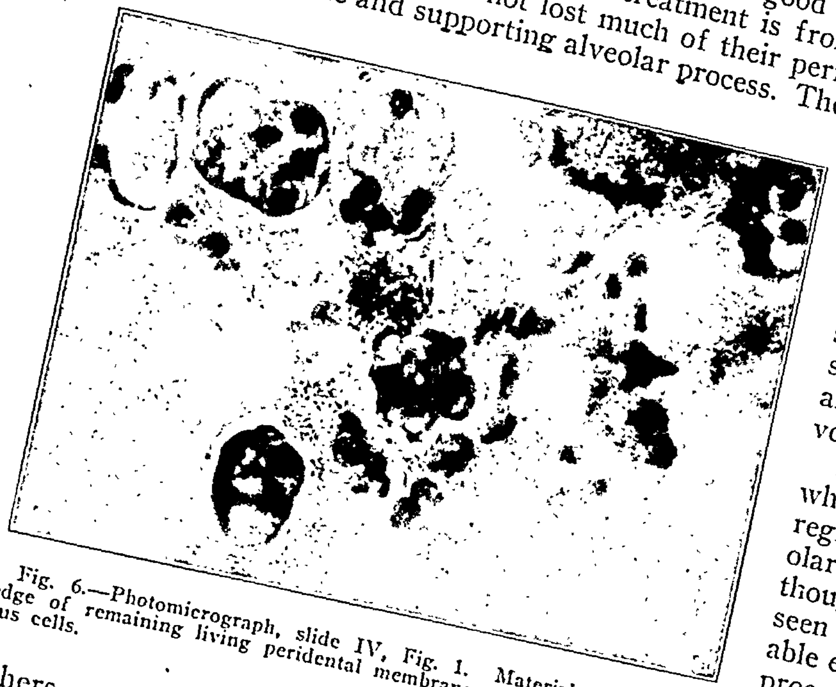

Fig. 6.—Photomicrograph, slide IV, Fig. 1. Material scraped from edge of remaining living peridental membrane—many endamebas, few pus cells.

Rogers[6] was the first to employ emetin hypodermically as an endamebacide. He found it strongly endamebacidal in dilutions of 1 to 100,000. Therefore there would seem no good reason for employing doses larger than about ½ grain for a normal-sized adult. We have not found that a dose larger than ½ grain (up to 3 grains) given hypodermically each day will cause the endamebas to disappear any more rapidly than this amount will do. Less than this amount is sometimes not sufficient. In special instances it may seem desirable to use somewhat larger doses, but for all ordinary cases ½ grain is the proper daily dose.

Endamebas disappear from all lesions following from one to three days of treatment in more than 90 per cent. of all cases. They disappeared in 99 per cent. of our cases following at least six days of treatment. All cases should have at least three days of treatment and none need have more than six. Give ½ grain emetin hydrochlorid hypodermically each day for from three to six days, depending on the case and stage of the disease.

Coincidentally with the disappearance of endamebas the soreness, pain or discomfort and the amount of pus formed rapidly decrease. The tendency to bleed from slight trauma usually ceases within forty-eight hours, and in almost all cases the patient recognizes, and feels confident of, the beneficial effects within a few days. If a physician feels skeptical as to the specific beneficial effect of emetin, he can remove his skepticism by treating and observing a few patients. Both he and the patient are convinced of the efficacy of the treatment within a short time.

After the endamebas have been destroyed by the emetin treatment, however, there are still left the lesions which will require days, weeks or months to heal. Probably no two lesions or pockets in a given case in which many teeth are involved are exactly alike in size, shape, depth, amount of tooth and alveolar process denuded of periosteum, etc. One or more early lesions may be shallow and may have never reached the alveolar level. Others are deeper. One extends all around the tooth, another runs to the end of the root on one side, while the tissue on the other side is all right. In one instance the edge of the alveolar process only is denuded of periosteum; in another the bone and root are uncovered to the bottom of the socket, and in still another there has been considerable destruction of the periosteum covering the outer surface of the alveolar process, giving rise to gum boils, sinuses, etc. In the last stages the tooth is loose in its socket and is held in place perhaps only by a small amount of dead, diseased or dying membrane in the very bottom.

It is an important question in this connection as to whether the periosteum or a substitute tissue can be regrown to fill the space between the root and the alveolar process after it has once been destroyed, even though we stop the destructive process. We have not seen any evidence that this can occur to any considerable extent. If it cannot, then the part of the alveolar process that has been denuded of periosteum will have to be absorbed or removed by Nature (or artificially by proper operative treatment) before complete healing takes place and the gum attaches to the remaining peridental membrane. All the time there must necessarily be some pyorrhea. This will require weeks or months in many instances, and during this time the lesions offer most favorable soil for reinfection with endamebas. On account of the great prevalence of the disease, and therefore the many sources of the parasite, such a patient with our present habits could hardly be expected to escape reinfection more than a few days, and certainly not as long a time as would be required for many of the lesions to heal. This would seem to take away the hope of complete cure. Daily hypodermics of emetin cannot be continued indefinitely on account of impracticability and the discomfort they cause, if for no other reason.

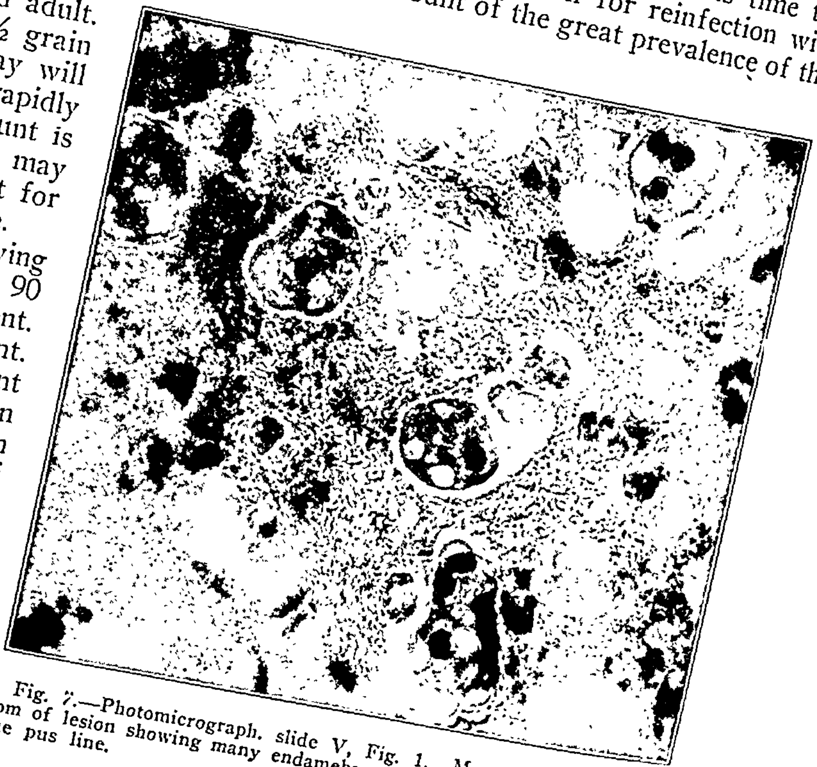

Fig. 7.—Photomicrograph, slide V, Fig. 1. Material from very bottom of lesion showing many endamebas, and bacteria but almost beyond the pus line.

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[6] Rogers: Brit. Med. Jour., June 22 and Aug. 24, 1912; Therap. Gaz., 1912, xxxv, 837.

Reinfection can be avoided, no doubt, to some extent by exercising great care not to put things in the mouth that may have been contaminated by others. Such things as drinking and eating after others should surely be avoided. But greater protection can be secured from ipecac (or emetin if preferred) applied by the patient. Fluid extract of ipecac kills these endamebas when diluted 200,000 times. We first instructed patients to use a drop or two of ipecac on the wet toothbrush as a dentifrice in the usual way at night. Force the solution formed with the saliva between the teeth and spit out the excess. On account of the fact that pure fluid extract of ipecac frequently irritates the mucous membrane, we have lately prescribed the fluid extract diluted ten or more times with alcohol. One drop of this on the wet toothbrush furnishes a much stronger solution than is absolutely necessary to kill all endamebas with which it comes in contact.

Showing that this use of ipecac promises to destroy endamebas that may have been recently planted superficially, and therefore protects considerably against reinfection, we have had patients use it without any other treatment having been given, and in a number of instances endamebas disappeared from shallow lesions, which entirely healed. Of course, it does not affect those in deep lesions, and is not to be recommended for treatment of the disease. In the light of our present information it should be continued indefinitely for prophylaxis, both by those who have the disease, and especially by those who haven't it. Perhaps a still better way to use it would be to put a drop or two of fluid extract of ipecac in half a glass of water and thoroughly rinse the mouth with it each night before retiring.

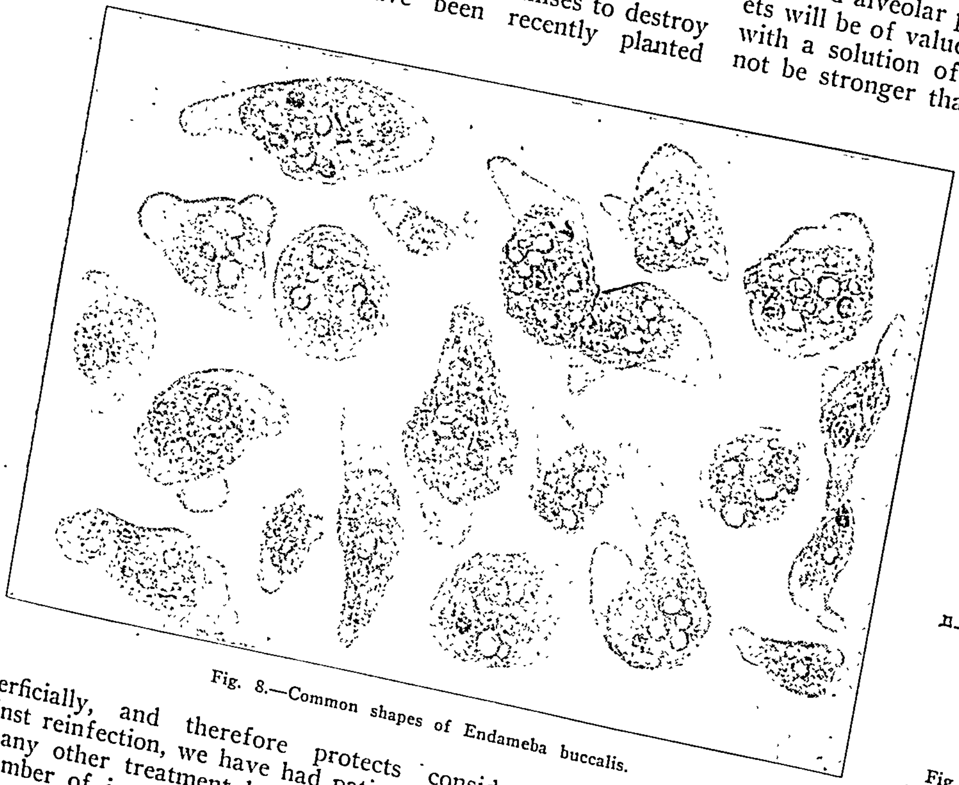

Fig. 8.—Common shapes of Endameba buccalis.

In spite of prophylaxis, however, relapse or reinfection has occurred in one or more of the lesions in about 12 per cent. of our cases within four weeks of the time when the treatment with emetin was given. We formerly thought that a single dose of emetin should be given about once a week to all patients to kill the parasites in any such instances, but we have later learned that one dose only of emetin seldom destroys endamebas when present. We now feel sure that in cases in which endamebas reappear the full course of emetin should be repeated. Perhaps the best plan for those not prepared to make the necessary microscopic examination to determine whether the endamebas have reappeared, would be to repeat the course of emetin every three or four weeks for at least one or two times in all advanced stage cases. It should be understood that no case should be considered cured, not only until the endamebas have disappeared, but until all the lesions have healed and the pyorrhea has stopped entirely. Those who expect to accomplish this result in a few days will surely be disappointed in most instances.

No doubt proper dental treatment, consisting of cleaning and scaling the roots, removing dead and denuded alveolar process, and cleaning out large pockets will be of value. Frequently irrigating the pockets with a solution of fluidextract of ipecac which need not be stronger than one drop to four ounces would be suitable for this purpose. Most patients soon learn to do this for themselves pretty well if instructed and provided with the ipecac and proper dental syringe (Berlin abscess syringe).

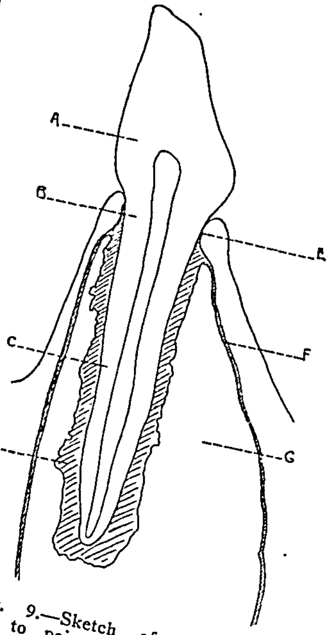

Fig. 9.—Sketch of normal tooth to point out peridental membrane, the seat of the endamebic disease.

We have used emetin made by Burroughs and Wellcome; Mulford; Parke, Davis & Co.; Mallinckrodt, and by Lilly, with apparently equally favorable effect on the disease. The sealed ampules each containing the required dose in solution seem to us to be the most convenient form for ordinary use. In most of our experiments we have been obliged for reasons of economy to prepare our own solutions from the bulk emetin.

During the past two months we have experimented extensively with a preparation of the alkaloids of ipecac that can be taken by mouth without producing nausea, and we are now prepared to announce that, in most instances, at least, it is as efficient in proper doses as emetin given hypodermically. This will make treatment available and practical for a great many more people who have the disease.

The preparation known as Lloyd's reagent, discovered by J. U. Lloyd,[7] has the property of removing all the alkaloids from neutral or acid aqueous solutions of a drug by adsorption. When thus combined with the reagent, which is essentially aluminum silicate,[8] the alkaloid is promptly set free in alkaline solution. It is not liberated in the acid gastric juice, but is set free and absorbed when it reaches the alkaline intestinal juices. The only commercial preparation of the alkaloids of ipecac made in this way that we know of is supplied by Eli Lilly & Co. in the form of tablets, each representing 10 grains of powdered ipecac and called Alcresta ipecac. We have tried one tablet three times a day, two tablets three times a day, and three tablets three times a day. One tablet three times a day does not destroy the endamebas in the mouth in many cases in a week or ten days. Two tablets three times a day destroys all demonstrable endamebas in six days or less in practically all cases. This represents only about ⅔ grain of emetin, and when we consider that it requires considerably larger doses of most alkaloids administered by mouth to produce the same effect as smaller doses administered hypodermically, we could hardly expect smaller doses than this to be successful. Three tablets three times a day destroy all demonstrable endamebas in from four to six days. One patient still had endamebas in one pocket after the fourth day, but this is one instance in which emetin given hypodermically also failed. We have been unable to discover the cause. They disappeared from other lesions and there was apparent improvement in this lesion, but the endamebas persisted in spite of two courses of emetin and one course of the Alcresta ipecac tablets. This form of ipecac does not cause nausea, but there is frequently more or less abdominal discomfort produced by it and also some looseness of the bowels. These symptoms have not been sufficient in any of our cases to make the treatment impractical. We should expect, however, to find an individual occasionally who could not take it satisfactorily, and also those who would not absorb enough of the drug to destroy their endamebas on account of the diarrhea produced, carrying it through the intestinal canal too rapidly.

SUMMARY

1. Pyorrhea dentalis and alveolaris is practically a universal disease, which leads to the loss of the teeth by a long suppurating process. All people have it sooner or later. It begins in early adult life or earlier.

2. The specific cause of the disease is *Endameba buccalis* and possibly other species, which infect and destroy the peridental membrane. The pyorrhea results largely from the secondary infection.

3. The demonstrable endamebas can be destroyed by giving ½ grain of emetin hydrochlorid hypodermically for three to six successive days.

4. Apparently equal endamebacidal effect is produced by two or three Alcresta ipecac tablets (Lilly) taken by mouth three times a day for four to six successive days.

5. The lesions require variable lengths of time to heal, but many could not reasonably be expected to heal in less than several weeks or months.

6. The treatment must be repeated from time to time until the lesions all heal, on account of relapse, or probably reinfection of the lesions as a result of the great prevalence of the infection.

7. Injecting ipecac or emetin into the worst lesions ought to be of service and can be carried out by patients in many instances.

8. Rinsing the mouth thoroughly with a solution of fluidextract of ipecac is believed to protect, to some extent, against reinfection, and actually cures the disease in its earliest stage in some instances.

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[7] Lloyd, J. U: Chem. Abstract. 1913, vii, 683

[8] McGuigan, Hugh: A Colloidal Compound of Strychnin and Its Pharmacology, The Journal A. M. A., Nov. 28, 1914, p. 1933.

THE USE OF SKIN GRAFTS IN THE AMBULATORY TREATMENT OF ULCERS

REPORT OF FIFTY CASES *

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INTRODUCTION

In the outpatient department of every large surgical clinic there are a great number of patients with ulcers of varying etiology, many of them of long standing. The treatment of these ulcers is usually carried out in a routine manner with the idea of getting through with the dressings as quickly as possible. What has been the result? Some of the patients have been cured; some have continued at the same clinic for many years, being satisfied with the temporary comfort of the dressings; others have drifted to neighboring clinics, with no better results, and finally return, only to repeat the round; while still others give up in disgust and treat themselves at home, only returning to the dispensary during acute exacerbations.

Taking into consideration the unsatisfactory results ordinarily obtained in the treatment of these patients, the economic waste to the hospital in the time taken to do the dressings and the materials used is enormous. The wage earning capacity of the patient is nearly always considerably lowered, and in some instances their work has to be discontinued. Serious consideration has often been given to the matter, as either condition is of utmost importance to these poor people. It seemed to me that the results might be improved, and the restoration of the full earning capacity hastened if each wound could be studied separately and treated by what we may call "intensive methods."

About fourteen months ago a trial was made of this idea in the Johns Hopkins Dispensary, and I was given the opportunity to study and treat a large number of these wounds. Many old and well-proved methods were used, as well as a number of new, and some hitherto untried, methods. Such favorable results were obtained that special rooms were set aside for this work and every facility given. Among a number of methods for accelerating the healing of ulcers the *transplantation of skin* was tried on a series of cases.

It has always been taught that the first essential for success in skin transplantation was absolute rest with immobilization of the part grafted. I fully agree with this principle as the ideal procedure, and believe that it should always be carried out when possible. The use of skin grafts as ordinarily done in hospitals on clean wounds, with patients in bed and having the maximum of good food, good nursing, cleanliness, fresh air, and above all, complete rest, is comparatively simple to the experienced surgeon. On the other hand, take the patients who come to the outpatient department. They are usually poorly nourished; the houses in which they live are often overcrowded and unsanitary. They are, as a rule, unable to stop their work, except for the time taken off for dressings. Many of them should be in the hospital, but there is little chance for even the few who desire admission to secure beds, as there are very few beds available for chronic ulcers. In short, rest, the factor of greatest importance in the treatment of these cases, which is emphasized by every writer on the subject, has to be entirely eliminated. With all these unfavorable conditions in mind, I began gradually to prepare certain wounds with the idea of grafting. Fortunately the first case grafted, that of a long-standing varicose ulcer, was, to my surprise, a complete success, and that success stimulated further trials.

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* Read before the Southern Surgical and Gynecological Association, Dec. 17, 1914.

* From the Surgical Out-Patient Department of the Johns Hopkins Hospital.

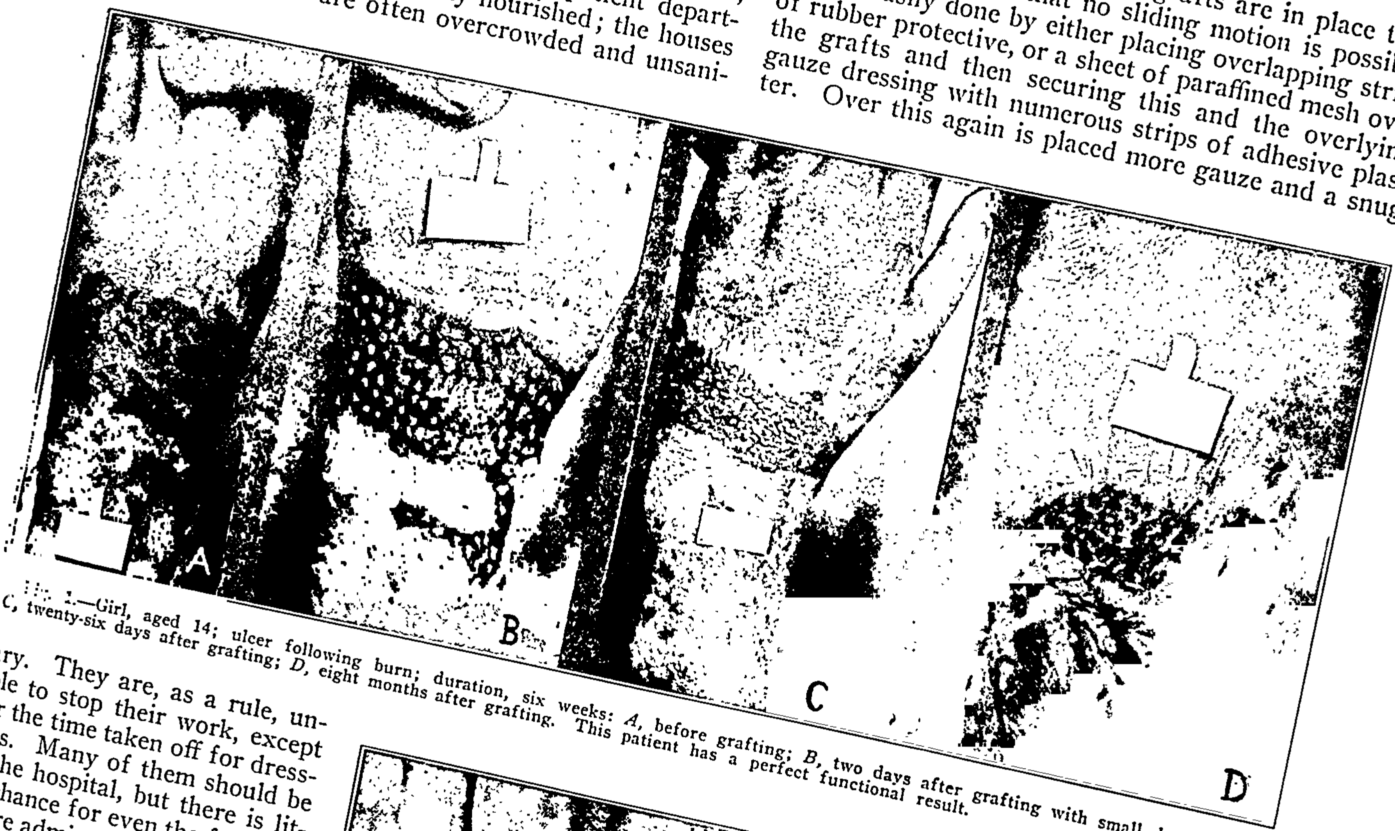

Fig. 1.—Girl, aged 14; ulcer following burn; duration, six weeks: *A*, before grafting; *B*, two days after grafting with small deep grafts; *C*, twenty-six days after grafting; *D*, eight months after grafting. This patient has a perfect functional result.

All of the grafts were placed on undisturbed granulations. I will not discuss at this time the methods used to bring the granulating wounds into a healthy condition; suffice it to say, that many operative methods and local applications were used to accomplish this purpose. The technic of cutting, applying and dressing the grafts was that ordinarily used.[1]

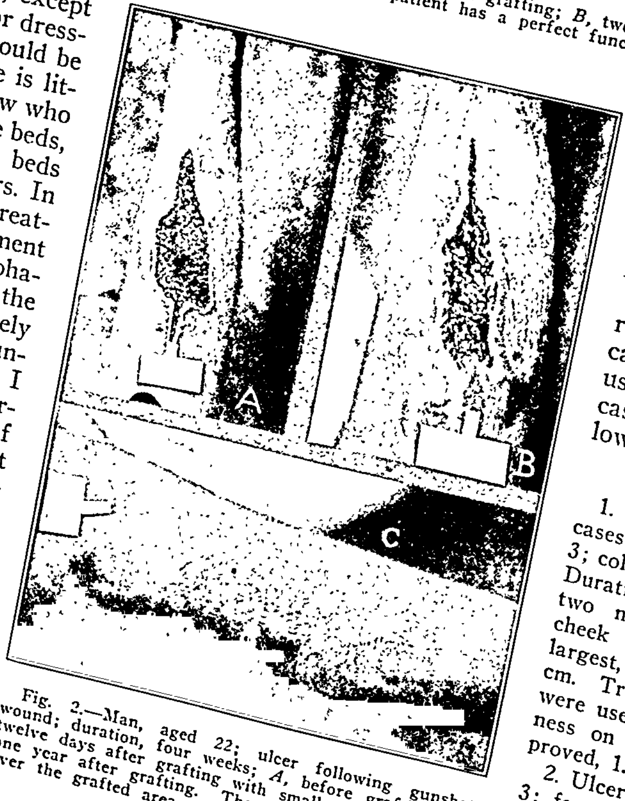

Fig. 2.—Man, aged 22; ulcer following gunshot wound; duration, four weeks; *A*, before grafting; *B*, twelve days after grafting with small deep grafts; *C*, one year after grafting. The skin is freely movable over the grafted area, and the result is excellent.

It is obvious that when the grafts are in place they must be secured so that no sliding motion is possible. This is easily done by either placing overlapping strips of rubber protective, or a sheet of paraffined mesh over the grafts and then securing this and the overlying gauze dressing with numerous strips of adhesive plaster. Over this again is placed more gauze and a snug gauze bandage, and finally a muslin or crinolin bandage. Sometimes thin strips of splint wood were incorporated in the dressings. Each patient considered in this series has continued his or her daily occupation.

This report will analyze the results obtained in the first fifty cases in which grafts were used. For convenience the cases may be divided as follows:

SUMMARY OF CASES[2]

1. Ulcers Following Burns; 8 cases: Male, 4; females, 4. White, 3; colored, 5. Ages, 11 to 50 years. Duration, three weeks to twenty-two months. Situation, leg, 6; cheek and wrist, 1 each. Size, largest, 16x6 cm.; smallest, 2x3 cm. Treatment, small deep grafts were used on 7; and whole thickness on 1. Result, well, 7; improved, 1.

2. Ulcers of Leg; 9 cases: Males, 3; females, 6. White, 8; colored, 1. Ages, 39 to 61 years. Etiology. Six were varicose ulcers with markedly enlarged veins. Three were luetic ulcers with enlarged veins in one. Duration, three weeks to twenty years, continuously; off and on, three years to twenty-five years. Situation, middle third, 2; lower third, 7; right leg, 2; left leg, 6; both legs, 1. Size, largest, 8x17 cm.;

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[1] Davis, J. S.: Skin Transplantation, with a Review of 550 Cases the Johns Hopkins Hospital, Johns Hopkins Hosp. Rep., 1910, xv, 307; Use of Small Deep Skin Grafts, The Journal A. M. A., Sept. 19, 1914, p. 985.

[2] Some of the lesions referred to in this report are, according to definition, granulating wounds. To my mind there is a distinction without a difference between a sluggish granulating wound and an ulcer covered with granulations, whatever the etiology may have been.

smallest, 2.5x1.5 cm. Treatment, small deep grafts were used on all. Results, well, 6; improved, 2; unimproved, 1.

3. Ulcers, Postoperative; 17 cases: Males, 12; females, 5. White, 16; colored, 1. Ages, 12 to 84 years. Etiology: The ulcers followed amputations, operations for ingrown toe-nail, epitheliomas and infections. Duration, four days to three months. Situation, finger, cheek, forehead and forearm, 2 each; leg, breast and scalp, 1 each; toe, 6. Size, largest, 19x5.5 cm.; smallest, 3.5x2 cm. Treatment, small deep grafts were used on 16; Thiersch grafts on 1. Result, well, 14; improved, 3.

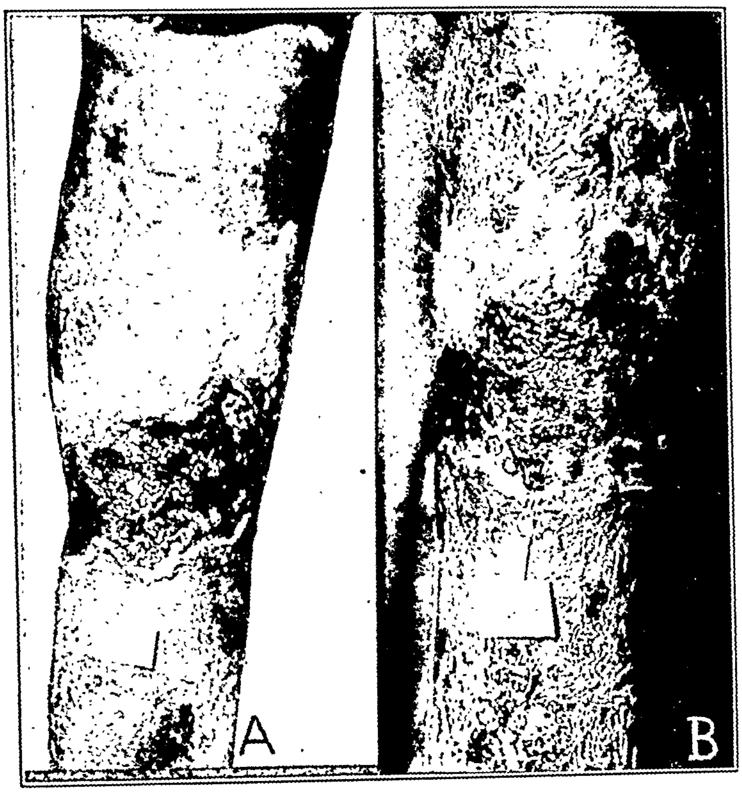

Fig. 3.—Man, aged 50; ulcer following burn; duration, twenty-two months: *A*, before grafting; *B*, one and one-half months after grafting with small deep grafts. Note the solid healing in the midst of scar tissue.

4. Ulcers, Traumatic; 9 Cases: Males, 7; females, 2. White, 7; colored, 2. Ages, 11 to 63 years. Etiology: Injuries of various kinds. Duration, two weeks to ten months. Situation, finger, 3; leg and ankle, 2 each; foot and wrist, 1 each. Size, largest, 8x6.5 cm.; smallest, 1.5x1.5 cm. Treatment, small deep grafts were used on all. Result, well, 7; improved, 1; unimproved, 1.

5. Ulcers, Miscellaneous; 7 Cases: Males, 5; females, 2. White, 5; colored, 2. Ages, 13 to 80 years. Etiology, following infection and frost bite, 2 each; trophic, ice bag necrosis, and tuberculosis of chest wall, 1 each. Duration, two months to eight years. Situation, foot, 4; leg, abdomen and chest wall, 1 each. Size, largest, 7x5 cm.; smallest, 2x2 cm. Treatment: Small deep grafts were used on all. Result, well, 2; improved, 2; unimproved, 3.

General Summary: Males, 31, females, 19. White, 39; colored, 11. Ages, 11 to 84 years. Duration, few days to twenty-five years. Size, largest, 8x17 cm.; smallest, 1.5x1.5 cm. Treatment: Small deep grafts were used on 48; Thiersch grafts on 1; whole thickness grafts on 1. Result, well, 36; improved, 9; unimproved, 5. Of those wounds which were improved by grafting but not completely healed, 5 were situated on the foot and 4 on the leg. Of those which were unimproved, 2 were on the leg, 2 on the foot and 1 was on the chest wall.

REMARKS

All of the grafts were autografts. Small deep grafts were used on most of the wounds, as the operative procedure is simple, and furthermore, no other type of graft could have been successful on many of the wounds grafted.

In some instances, in which the grafts were placed close together, the ulcers were covered with epithelium within a week. When a partial grafting was done, or when only a portion of the grafts were successful, a second grafting was required to fill the areas not covered.

Several graftings were done in all instances of failure, without result. It is interesting that several of these wounds were subsequently grafted in the hospital, without success, so that the failure seemed to be due to the wound itself, rather than to the fact that the patient was not kept at rest.

I feel confident that the percentage of takes would have been considerably larger had the cases been selected as to situation, cause, etc., but in order to test the procedure, ulcers in many situations, and of varying etiology were grafted. As might be expected, the ulcers on the feet and legs were more difficult to heal than those in other situations, and the failures were almost entirely confined to those regions.

I have been able to observe some of these patients for over a year after grafting, and there has been no recurrence in a single instance in an area successfully grafted. In one or two cases with marked varicose veins, small ulcers on other portions of the leg have occurred, but not in the grafted area.

CONCLUSIONS

From the results obtained in the first fifty cases in which grafts were used in the ambulatory treatment of ulcers, I feel that we have added to our armamentarium a method of treatment which has hitherto been used only on patients resident in the hospital. In other words, the successful use of grafts in the out-patient department will make for hospital economy, and will also hasten the return of many patients to full wage earning capacity.

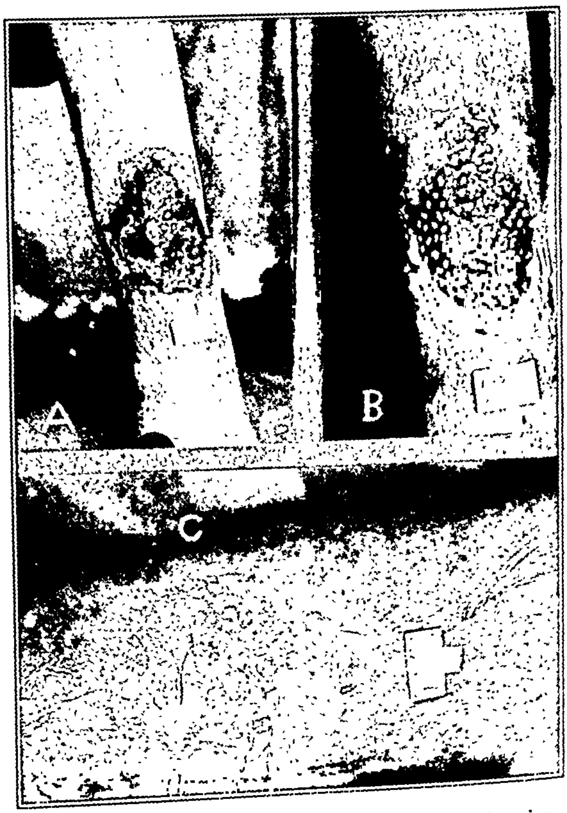

Fig. 4.—Woman, aged 46; ulcer of leg, varicose; duration, twelve years, continuously: *A*, before grafting; *B*, one week after grafting with small deep grafts; *C*, five months after grafting; examination of this patient eleven months after grafting showed no tendency to recurrence. The healing was stable and the individual grafts are still plainly visible.

VERTIGO

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In this preliminary paper we shall endeavor (1) to outline, necessarily very briefly, a conception of vertigo which appears to us to be based on anatomic and physiologic data, and (2) to point out how this conception aids in the diagnosis and treatment of cases of vertigo. No attempt will be made to enumerate the diseases in which vertigo is a more or less conspicuous symptom, for it appears to us that with a clear conception of what vertigo is there will be less necessity for any such elaborate and detached enumeration. It is unnecessary to apologize for discussing this subject, for the significance of vertiginous attacks offers difficulties both to the general practitioner and to the specialist in different branches of medicine.

Vertigo, when considered from the point of view of etiology, has been and still is a subject of great complexity. Its frequency in so many diverse diseases offers a fruitful field for speculation. The importance of its interpretation from the point of view of diagnosis need not be insisted on. We all know that it is most elusive in response to treatment. One difficulty in regard to its interpretation lies in the fact that most of us have no clear conception of what vertigo is. Subjectively, we all have had experience with it. But few would be prepared offhand or even after considerable thought to define it in terms conveying any conception of its anatomic or physiologic significance. Yet without such a clear conception its diagnostic significance must be largely lost and its treatment must be haphazard.

The term "vertigo" is commonly applied to a sensation of rotation of surrounding objects or of one's self. While true that rotation is a conception of vertigo in its most pronounced form, still there are other forms in which the sensation is not that of rotation, but of a feeling of instability either of one's self or of surrounding objects. There may be the feeling, not that either we or the objects around are rotating, but that we are falling or swaying, or that the objects around us are sinking or rising.

Not all its modes of manifestation, however, can be expressed clinically in terms of instability. We are here dealing with a subjective phenomenon, and every one recognizes how difficult it is to get accurate data on subjective sensations. We all know how the same feeling may be expressed by different persons in different ways, apart from the fact that the sensation may be more marked in one than in another. Investigation has shown that from the clinical point of view we must include under the term "vertigo" sensations of many kinds: a blurring vision, a feeling of discomfort or of anxiety, fulness in the head, as after smoking; a feeling of weakness, a disturbance of consciousness; in short, a variety of sensations which, if they persist, tend sooner or later to become more pronounced as disturbances of equilibrium.

While vertigo may be traceable most frequently to some pathologic condition disturbing, either directly or indirectly, the mechanism concerned with equilibrium, there are occasions when obviously no such pathologic condition exists. For instance, it may be traceable to the possibility that the surrounding circumstances are such that should a disturbance of equilibrium result, a fall of some considerable magnitude might follow; or there may be simply the fear that, given certain eventualities, a fall would occur; for instance, looking over a bridge into a ravine, or standing on the parapet of a tower with thick mists obscuring the view. That we know the sensation to be irrational does not seem to have much weight.

When vertigo has once arisen under certain conditions, as of fear arising on our being in a dangerous position, it may easily be aroused again under conditions similar in kind though less rational in reality — probably dependent on the fact that anatomic paths once traveled are more easily traveled again.

In the monograph "Der Schwindel," Ewald defines vertigo as a depression of our static consciousness, and Wollenberg as a perplexity in regard to our condition in space, both of which definitions, as Ewald says, amount to the same in the end. We venture to suggest that such statements are so obscurely based on anatomic or physiologic data that they do not help toward a clear, satisfactory definition.

All are agreed that vertigo is related in some way to disturbances of equilibrium. In order to get a clear conception of what vertigo is, and where the disturbance which causes it may arise, it is necessary to have a conception of the paths along which impulses which maintain equilibrium may pass. To preserve equilibrium impulses are constantly coming to the brain from four chief peripheral sources: (1) the ear, (2) the eye, (3) impulses from muscles, tendons and joints, and (4) impulses from the skin, touch and pressure. These impulses and probably others as well, for example, tactile hairs,[1] result in muscle coordination whose most important function is to preserve equilibrium.

We are all agreed that vertigo bears some relationship to a disturbance of equilibrium. But extensive nerve lesions as in ataxia can make difficult or impossible standing or walking without the help of the eyes, without, however, causing vertigo. The tabetic with his eyes shut has instability. He then may have the sensation of vertigo, but he does not fall because he has vertigo. He falls because he experiences a sudden unexpected loss of afferent impulses from the eyes on which he has been depending to reinforce the other impulses which, unaided, are insufficient to maintain his equilibrium. He has vertigo because the sudden closing of the eyes has intensified the mental confusion resulting from the inadequacy of the impulses from the muscle, tendon, joint and skin, which inadequacy has been compensated for by the visual impulses. In the tabetic the muscular incoordination which is the primary factor may appear without vertigo. In the labyrinthine irritation, the instability is the outward manifestation of the vertigo, which vertigo is, or has been, present and may precede the instability.

Vertigo arises from a confusion or dissociation of the impulses on which the subject bases his conception of his position in space. By far the most important of these impulses concerned with the conception of the position in space, or change of position in space, arise from sense organs in the head segment, the otic labyrinth and the muscular and retinal portions of the

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[1] Vincent, S. B.: Jour. Comp. Neurol., 1913, xxiii, 25.

eyes. In the tabetic, the mechanism of the head segment is not primarily disturbed, but the proprioceptive (muscle, tendon, joint) and the skin sensations are disturbed.

Ataxia may lead to disturbance of equilibrium, but we may have ataxia without vertigo, or vertigo without ataxia. Both ataxia of a certain sort and vertigo are due to disturbances of afferent impulses concerned with equilibrium, but the ataxia is due to a loss in a group of afferent impulses, while vertigo is due to a disturbance of the normal association of certain groups of afferent impulses, especially those from the head segment. An animal after double labyrinthine removal may have its objective signs of vertigo reduced by throwing out other afferent impulses and so reducing the factors which cause the disharmony. Although for purposes of brevity, we are retaining the term "ataxia" in the present discussion because of its universal use, we wish to point out here that it is a very inexact term at present and should be more clearly defined.

It will, then, be noted that what we insist on is that it is not instability alone which constitutes vertigo on its subjective side; it is the rising into consciousness of the sensation of instability; it sometimes is the fear that such an instability may occur, or a fall be possible. There may be no outward objective symptom of vertigo; or there may be incoordination, and the consequent muscular endeavor to maintain equilibrium.

Normally, the afferent impulses which maintain equilibrium are harmonized subconsciously, and it is only when disorganized that they ordinarily attract our attention. The explanation of this is obvious. They are so essential to man's existence and so constant in their activities that Nature has arranged that they work subconsciously; otherwise their insistence on recognition and conscious adjustment would be a serious detriment to man's mental development. But, as in many other subconscious activities, consciousness may enter in either as a controlling or disturbing element, for example, through memory and emotions. Such a disturbing influence from a higher mechanism may cause disharmony, and so there arises psychic vertigo.

In the cerebrum these constant afferent impulses are, under ordinary conditions, associated, or to use a better term, harmonized or integrated, to preserve the equilibrium. If for any reason they become dissociated or disharmonized or disintegrated, the conscious confusion that results is vertigo. The motor incoordination which forms the objective symptoms of vertigo is a result of this dissociation.

Vertigo for the present may be considered as the confusion resulting from the coming into consciousness of afferent impulses concerned with equilibrium which ordinarily are associated (integrated), but now for some reason have become dissociated. Of the impulses coming in from the peripheral organs mentioned, the most important is the ear, and any slight disturbance of the labyrinth will produce severe vertigo. On the other hand, a gross lesion of the third and fourth groups mentioned above may exist without vertigo. Disturbances of the eye are midway between the two; and probably lesions here are largely influenced by the close association of eye movements with the labyrinth. We should elaborate this point, as it is fundamental to a conception of our views. The physiologic action of the labyrinth is primarily to preserve the knowledge of the position of the head in space and reflexly to maintain equilibrium. To do this the labyrinth is closely related to the musculature of the body, especially the muscles of the head, and the relationship is more clearly discernible in its action on the freely movable muscles of the eyes. An observable outcome of this relationship is that, no matter how the head is turned, the eyes involuntarily are readjusted. Otherwise, the outside world would move with each movement of the head and endless confusion result. Mechanical irritation of the labyrinth with the head at rest, for instance, with hot water, results in a message from a receptor which, normally interpreted, indicates that the body is rotating and calls for certain movements of readjustment. But in this instance the inflowing messages from Groups 2, 3 and 4 are uninfluenced by this irritation and contradict the messages sent in from the labyrinth and resist the demand for readjustment. So there results a confusion in the integrating mechanism arising from this dissociation of peripheral messages; impulses which normally work together are no longer in harmony; and the person, becoming conscious of the disharmony, experiences the sensation which we call vertigo.

Up to a certain point rotation may be carried on, as in a swing, and compensatory movements occur by which means the subconscious impulses are able to adapt themselves to these impulses and no vertigo results. But let the rotation be so great that the impulses from the last three groups no longer fall into line with those arising from rotation, and the controlling power of the cerebrum no longer suffices—then vertigo results. Practice and age are in this an important factor.

Visual vertigo does not so often come under the observation of the clinician as labyrinthine. It can often be produced if we look at a large mirror which is moving without our knowledge. Double vision or errors of refraction cause vertigo because they give false impressions of position in space. The eye muscles, partly because of their close relationship to the labyrinth, play a greater part in vertigo than the other muscles of the body.[2] Their incoordination arising from any cause or the nystagmus which arises when the labyrinth is stimulated is a manifestation of this.

Not only does vertigo arise from disturbance of the peripheral sense organs, but lesions involving their central paths will also produce it. So disturbance of the complex vestibular path, or of the great coordinating mechanism for the unconscious sensations from the muscles—the cerebellum—will give vertigo. One thing that has been impressed on us by experiment is the importance of pressure on the eighth nerve or in the posterior fossa as a cause of vertigo. Clinicians have paid too little attention to the effect of pressure, which need not be very great to produce signs of vertigo.

So far as the areas in which this integration takes place are cerebral, cerebral lesions will cause vertigo, and there is sufficient evidence to show that vertigo does arise from lesions of the cortical mechanisms. So a tumor of the cerebrum may set up an excitation giving a sensation of position in space at variance with impulses from the eye or ear, and vertigo results.

Again, it may occur in a hyperexcitability of the nervous system. So in neurasthenia, in which we have probably a decreased neural resistance in certain paths and systems due to disturbed metabolic processes, we may have vertigo. Here it may follow that the impulses, say from the two eyes or from the two ears, vary in intensity, and vertigo results. Ordinarily, these slight differences in the intensity of the impulses from the two sides may not rise above the threshold value of the reflex arc, and no symptoms follow.

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[2] Wilson and Pike: Proc. Soc. for Exper. Biol. and Med., 1913, x, 81.

We may therefore have vertigo due to: (1) organic lesions, or (2) functional disturbance.

Now as the diagnosis of a functional disturbance implies the consideration and elimination of organic lesions, in all cases of vertigo we have to examine at least the four sources mentioned above. And as of these the labyrinth is the most important, the condition of the ear must always be considered. Very slight irritation of the sensitive labyrinth will produce vertigo and muscular incoordination. Even when the muscular phenomena are manifest in the eyes alone more or less vertigo is present. It must be noted that in slight cases we can inhibit the vertigo just as we can inhibit a labyrinthine nystagmus. In such cases the dissociation of afferent impulses is reassociated through conscious processes, and the objective as well as subjective phenomena are controlled. The instability is the outward manifestation of the vertigo or rather of the subconscious state from which the vertigo arises. But the otologic aspect of the problem is not confined to the internal ear. It extends to the vestibular nerve and its central connections, some of which are known, but the greater part are still in doubt.

As equilibrium is a function of the labyrinth, so vertigo is one of the most important symptoms of its disease. We may distinguish: (*a*) direct vertigo, due to lesion of the vestibular apparatus, and (*b*) indirect vertigo — disturbance of the vestibular tract, for instance, from gastro-intestinal disturbance.

In both of these, the sickness and vomiting may be due to the spread of vestibular irritation to a neighboring mechanism or, in the indirect vertigo, from the stomach itself. It is not the intention at this time to elaborate these points, but rather to indicate how the otologist attacks the problem. This we can best do by outlining briefly a few of the cases that have come under observation—our remarks being directed toward methods of diagnosis and of treatment.

Case 1.—*History.*—W. G. K., man, first seen December, 1912, complains of repeated attacks of vertigo with nausea and vomiting during the last four years. These are increasing in severity and frequency so that now he is frequently incapacitated for work. There is a constant feeling of uneasiness. He is very subject to "colds in the head," and when these occur an attack often comes on. He has had a course of bromids for over a year. There is no history of syphilis.

When first examined he had occasional subjective sensations of movement of rotation, but no nystagmus was observed. During a severe attack objects go to right; the patient feels himself going to right but falls to left. If he lies on right side vertigo is diminished. Observation during attacks showed: (1) nystagmus, slow to left; (2) turning eyes or head to left, vertigo less; to right, vertigo increased; (3) skin cold.

Examination during interval when no pronounced vertigo, showed: Romberg to left, no nystagmus; hearing, right, normal; left, markedly diminished, diminution of tones at both ends of scale but especially for lower tones. Rinné, negative; Weber, to right; bone conduction diminished. Both tympanic membranes slightly thickened and retracted; left slightly congested. Nasopharynx, markedly congested; numerous swollen follicles; synechiae in recessus pharyngeus (Rosenmuelleri). Left eustachian tube swollen and opened with difficulty; right normal.

Diagnosis, Treatment and Results.—Nasopharyngitis; tubal congestion on left side; left labyrinth affected. Nasopharynx and tube treated, synechiae broken down, follicles destroyed and zinc chlorid (from 2 to 5 per cent.) applied. Catheterization. Sodium bromid, 7½ grains, twice a day. The treatment calls for no particular remarks. The sodium bromid was stopped after a fortnight. The nasopharynx rapidly improved and the tube became less congested. With this improvement the vertigo disappeared and the hearing improved.

Present Condition, June, 1914: The patient has received no treatment for several months. Hearing is improved in left ear. Both tubes are equally patent. There have been no attacks of vertigo; once or twice when patient had cold in the head there was a feeling that it might come on.

The symptoms in this case point to a combination of internal and middle ear deafness. We believe that there is here a hypersensitive labyrinth probably due to vascular changes similar to those found in the nasopharynx and middle ear. Increase of extra labyrinthine pressure on a susceptible labyrinthine mechanism may produce vertigo. Slight increase of pressure may not do so; the pressure must bear a definite relation to the threshold value for stimulation of the vestibular nerve.

The following points are worthy of emphasis:

1. Patient falls to the left: In labyrinthine disease the patient falls to the side of the lesion. Bárány has stated certain laws in regard to the relation of the quick phase to falling. But as we have pointed out elsewhere,[2] this general rule holds: falling occurs in direction of slow phase of nystagmus.

2. Apparent movement of self to right: Nystagmus during attack slow to left. This is in agreement with the rotation law that apparent rotation of one's self is always in direction of rapid phase of nystagmus.[3] As a corollary, if patient's history show the subjective feeling of movement of self to right and on examination no nystagmus be present, we can assume that the nystagmus would correspond to this law, that is, be slow to left. This is an indication of the ear affected — subjective rotation to right — ear affected left. One may here note how difficult it is to get a distinct history of subjective sensations even from intelligent patients, and further, how much less reliable are the subjective sensations of apparent movement of external objects.

3. Sensations of apparent movement or rotation can persist after or without nystagmus.

4. Turning eyes to left, direction of slow phase of nystagmus, vertigo less: Quick phase of nystagmus alone can be inhibited and inhibition of quick phase inhibits rotatory sensations of self, of external objects and diminishes vertigo.[4]

5. In disease of the labyrinth the patient lies on the sound side; turning to the diseased side makes the vertigo worse.

The importance of pressure or variations of pressure on the labyrinth or on the vestibular nerve from whatever source as a cause of vertigo is not fully appreciated even though not uncommon, for example, after catheterization or Politzerization. We find that Högyes[5] more than a quarter of a century ago pointed out the association and explanation of vertigo from pressure in the ear, and we find that such an aurist as Politzer[6] and such a neurologist as Babinski[7] have noticed the effect of such pressure and the relief following its removal. More recently Bárány[8] has pointed out the possibility of its occurrence. The reason of this non-appreciation of the importance of pressure is not far to seek. The modern aurist still clings to the idea that the stimulation of the nerve endings in the semicircular canals is due to endolymphatic currents, even though Mach and Crum Brown long ago pointed out that such currents were inconceivable in such minute canals.

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[3] Bárány, quoted by Holt: Ocular Nystagmus and the Localization of Sensory Data During Dizziness, Psychol. Rev., 1909, xvi, 391.

[4] Bárány: Monatsschr. f. Ohrenh., 1906, xl, 193.

[5] Högyes: Arch. f. d. ges. Physiol., 1881, xxvi, 558.

Case 2.—*History.*—Man, aged 55, admitted to Wesley Hospital, November, 1912, complaining of vertigo. The first attack was three years ago, at which time he was dizzy and felt faint. He was then treated for left ear deafness by middle ear inflation with eustachian catheter and air pressure. After two weeks of treatment the vertigo left. He was free of discomfort for seven or eight months; then came a second attack which was less severe. About one year ago he had a third attack, less severe than the second. He was first seen by one of us in the present fourth attack, which came on about four weeks ago. He ascribes this attack to excessive fatigue. In the evening while in his office he was suddenly seized with dizziness; the room appeared to rotate and he was compelled to lie down. The severe vertigo lasted about three minutes, during which time he felt as if he were being turned round and round, but the direction of apparent rotation could not be accurately ascertained. This was the first time he had had a distinct sensation of rotation.

Since then he has been more or less dizzy all the time with occasional violent attacks during which a distinct sensation of apparent rotation of self and external objects is present and tinnitus may be increased. Vertigo is so constant and so subject to increase that he has had to abandon his practice. The symptoms are more marked in the evening. At night in the dark he often walks with a staggering gait. When lying down with his head braced he is relieved to some extent, but movement seems to increase his trouble. Reading or writing aggravates the attacks. When the dizziness is severe he feels unable to locate the position of the head, for instance, the angle at which it is; this he describes as inability with eyes shut to locate the head in space.

Present Condition.—Right ear normal for low voice and whisper; watch heard at arm's length; Rinné positive; high tones normal; membrana tympani normal; tube patent. Left ear: hearing deficient, traced to an explosion ten years ago; watch heard at 12 inches; Rinné positive; high tones deficient; bone conduction diminished; membrana tympani normal; tube normally patent. Romberg to left; no nystagmus; no increase in blood-pressure; eyes and other organs normal.

Comment.—The symptom of more or less constant vertigo is frequently associated with irritation of some part of the vestibular tract. In this case we believe that the vertiginous state from its association with auditory impairment was due to varying pressure on the left vestibular division of the eighth nerve or its terminations probably from disturbances of circulation. In such conditions good results are obtained from pilocarpin followed, if necessary, by iodids. The tendency recently has been to decry the value of pilocarpin, but there are many competent observers who have found it very serviceable. It is not our intention here to discuss its action, but among recent publications reference may be made to the work of Dixon and Halliburton.[9]

Treatment and Results.—Pilocarpin 1/20 increasing to 1/6 grain to obtain the physiologic action of the drug. The results were satisfactory. The violent attacks completely disappeared and the patient went home very much improved and was soon able to resume his work. One of us has kept in touch with this patient since, although he lives at some distance. The reports have been satisfactory until this recent communication:

July 7, 1914: "For the last six weeks the vertigo has returned in a mild form, appearing before dinner or just after and lasting until retiring. The postnasal catarrhal symptoms, manifested mostly by hawking and spitting with which I have been troubled almost all my life, do not appear any worse than usual. I do not believe the catarrh has anything to do with the symptoms of vertigo. The ear inflation you remember, before I came to you, made the vertigo worse, but the first and second attacks, years ago, seemed to be relieved by the middle ear inflation treatment. My general health for summer is as usual. I have thought of calling on you again should the vertigo continue, but as I have said, it is mild."

It would be easy to multiply such cases. The following case exemplifies another variety:

Case 3.—*History.*—H. W., man, aged 35, admitted to Wesley Hospital, Nov. 24, 1913, complained of vertigo and headache, which he has had for three months. The headaches are chiefly frontal. The vertigo is so severe that he is compelled to sit or lie down and hold on. An attack comes on at least once a day, lasts for an hour and is accompanied by nausea and vomiting. During the attack objects apparently go round in a circle (to right?). Up to ten days ago he had difficulty in swallowing and liquid food frequently returned through the nose.

Patient had syphilis three years ago; he has had mercurial treatment for six months, and recently one injection of salvarsan.

Present Condition.—The patient's walk is unsteady, but there is no marked ataxia. Romberg is questionable though with eyes shut he sways considerably. During an attack with his eyes shut he falls to the right and slightly back. There is a spontaneous nystagmus on looking to the left. With eyes shut and with palm down his right hand pointed to the right. He touches point of nose and other parts of body with fair accuracy. Slight paralysis of right facial and of right side of soft palate. Taste impaired. Left vocal cord paralyzed. Tongue deviates to left. Pupils react to light and accommodation. Hearing good in both ears and range unimpaired as tested by forks.

Nystagmus: Cold water in right ear for twenty seconds gave marked nystagmus slow to right, lasting three minutes. Vertigo is so marked that with eyes shut the patient feels himself falling and holds on to chair.

Cold water in left ear for forty seconds gave slight nystagmus lasting one minute. After the cold water in left ear he pointed accurately with his right hand, to the left with his left hand.

Both in blood and cerebrospinal fluid, Wassermann was strongly positive.

Diagnosis and Treatment.—Basilar syphilis involving the right seventh and right vestibular and right tenth nerves, and left tenth and twelfth nerves. Mercurial injections and inunctions were given.

The vertigo disappeared and the patient left the hospital December 9, improved.

The Physician as a Sanitary Policeman.—The present day physician wants to know not only what is ailing his patient, but also how his patient acquired the disease, whether any other persons are exposed to contagion from the same source, whether the patient himself is a danger to his friends and relatives, and whether the disease will spread throughout the entire community or can be confined to the single case in hand. He owes a responsibility not only to his patient but to the community. He is not only the caretaker and medical adviser of the sick. He is also the guardian and protector of the well. Each practicing physician is or should be a sanitary policeman for the protection of the community against contagion.—Frederick R. Green, *Northwest Medicine.*

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6. Politzer: Diseases of Ear, New York, 1909, p. 735.
7. Babinski: Ann. de mal. de l'orielle, 1904.
8. Bárány: Lewandowsky's Handbuch der Neurologie, 1910, p. 935; Tr. Internat. Cong. of Med., Otol. Section, 1913, p. 571.
9. Dixon and Halliburton: Jour. *Physiol.*, 1914, xlviii, 128.

THE CHEMICAL EXAMINATION OF DUODENAL CONTENTS AS A MEANS OF DIAGNOSIS IN CONDITIONS OF JAUNDICE *

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It is now almost four years since I first began to study the contents of the duodenum as a means of diagnosis in various conditions of pathologic interest. During this time, over 120 analyses have been made; included in this series is a group of fifty-two cases which presented the common symptom of jaundice. As the number and variety of these cases of icterus increased, it became more and more obvious that there existed in the duodenal tube a valuable instrument for gathering additional data bearing on the differential diagnosis of these conditions. It is logical and rational that a tube which can enter the duodenum and rest opposite the exit of the bile and pancreatic ducts should bring home most instructive data pertaining to the patency or non-patency of these structures. As the disease processes that cause the varieties of jaundice vary in each type of case, just so do the duodenal contents vary, until there becomes clearly evident a duodenal picture characteristic of each type of disease. An idea of the number of variations possible may easily be gathered by a glance at the following list of alternatives:

1. Both ducts may be closed.
2. Both ducts may be open.
3. The bile duct may be open, the pancreatic duct closed.
4. The bile duct may be closed, the pancreatic duct open.
5. The bile duct may be partially closed, the pancreatic duct open.
6. The bile duct may be open, the pancreatic duct partially closed, or the pancreas diseased.

As every disease gives a fairly constant duodenal picture, so conversely, the establishment of definite duodenal data points to certain recognized pathologic processes.

The technic of duodenal aspiration is by now so familiar to the medical public that a detailed description need not be entered on at this moment. I have in two previous publications[1] described in detail this technic. Suffice here to say that the Einhorn duodenal tube was utilized, being swallowed by the patient at night, and left in situ until morning. Then, two hours after the administration of a milk test meal, the contents of the duodenum were steadily aspirated for five minutes, measured, titrated and chemically examined.

We may proceed to discuss the duodenal picture characteristic of each pathologic process:

CHOLECYSTITIS AND CHOLELITHIASIS

This group (Table 1) comprises twelve patients suffering from gall-stones and gall-bladder infections, who have in the course of their disease evidenced jaundice at some time as a symptom. Cases of stone impacted in the common duct and giving the picture of continuous obstruction are separately discussed in the next subdivision.

As is well known clinically, we may note a gall-bladder full of stones, or various degrees of cholecystitis, without the occurrence of icterus at any time. But it is much more usual to observe a transient or more permanent jaundice, usually at the time of the acute attack, and usually explained as the passing of a stone through the cystic or the common duct. In this series of duodenal examinations the findings are constantly those of open bile and open pancreatic ducts. The bile, even when collected at the time of jaundice, is abundant in the duodenum, usually heavy, viscid and dark green, and an excess of mucus is visible. It would seem that a stone passing down the ducts does not at any time more than slightly obstruct the lumen. The pancreatic duct is always patent; in two of the twelve cases, a distinct diminution of the strength of the ferments pointed strongly to a pancreatitis as a complication.

TABLE 1.—CHOLECYSTITIS AND CHOLELITHIASIS

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Cholelithiasis	+	+	10	1: 5,800	0
2. Cholelithiasis-cholecystitis	+	+	12	1:12,000	6.3
3. Cholelithiasis	+	+	30	1: 1,000	10.0
4. Cholelithiasis	+	+	24	1:18,000	3.6
5. Cholelithiasis (after operation)	+	+	0	1: 5,000	1.0
6. Cholelithiasis (pancreatitis)	+	+	0	1: 3,000	0
7. Cholelithiasis (stone in cystic duct)	+	+	2	1: 4,300	0.6
8. Cholelithiasis (repeated attacks)	+	+	18	1:30,000	0
9. Cholelithiasis	+	+	30	1: 6,000	8
10. Cholelithiasis (pancreatitis suspected)	+	+	20	1:10,000	9.9
11. Cholelithiasis	+	+	18	1:10,000	3.0
12. Cholelithiasis	+	+	45	1:30,000	13.5

CATARRHAL JAUNDICE

Opportunity was offered for duodenal examination in only one case (Table 1), this, however, during the height of the jaundice. An abundant thin yellowish bile was obtained, containing normal pancreatic ferments.

IMPACTED COMMON DUCT STONE

Six cases were studied (Table 2). In five of them bile was found in the duodenum; in three of the five cases the full golden yellow bile coloration was replaced by a lighter yellow tint as of partial obstruction of the duct. The pancreatic ferments were present in full amount. In only one case was the obstruction so complete that no bile entered the intestine. This case was one of a very large calculus, firmly imbedded in the lower portion of the ductus choledochus; back of this stone were crowded several other smaller ones, also firmly set in the duct.

The retention of a permeable lumen in the common duct in cases of stone is not surprising, for it has long been known to clinicians that such obstruction caused by a stone is rarely a complete one. A positive test

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* From the Pathological Laboratory, Department of Physiological Chemistry, Mt. Sinai Hospital.

[1] Crohn, B. B.: Proc. Eighth Internat. Congress Applied Chemistry, 1912; Am. Jour. Med. Sc., 1913, cxiv, 393.

in the stool for bilirubin, when found, has been regarded as a point in favor of the diagnosis of benign versus a malignant condition at the area of obstruction. In a case of protracted jaundice with clay-colored stool, bile in the duodenal contents, even when diminished in quantity, speaks strongly for calculus, just as its complete absence furnishes strong presumption of malignancy.

STRICTURE OF THE COMMON BILE-DUCT

Three cases of post-operative strictures of the bile-duct were studied (Table 2). In all three, drainage of the choledochus had been practiced; the delay in the closure of the laparotomy sinus had led to the duodenal examination. In two instances no bile was found; pancreatic ferments were abundant. The stricture was evidently above the point of junction of the bile and pancreatic ducts; also it was a complete one.

TABLE 2.—CATARRHAL JAUNDICE

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Acute catarrhal jaundice	+	+	30	1:20,000	?
COMMON DUCT STONE					
1. Common duct stone (passed on the day succeeding duodenal exam.)	+	+	12	1: 1,000	0
2. Multiple stones, recurring after operation	+	+	15	1:10,000	3.9
3. Common duct stone	+	+	15	1:20,000	5.4
4. Common duct stone (hepatic cirrhosis)	+	+	27	1:30,000	—
5. Common duct stone	+	+	18	1:10,000	9
6. Multiple common duct stones	0	+	12	1:10,000	6
POSTOPERATIVE STRICTURE OF BILE-DUCT					
1. Complete stricture	0	+	30	1: 4,000	0
2. Complete stricture	0	+	24	1: 1,000	0
3. Incomplete stricture	+	+	15	1:30,000	12

TABLE 3.—NEOPLASMS

Case		Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Carcinoma of liver and gall-bladder		0	+	18	1: 4,300	1.5
2. General abdominal carcinomatosis		0	+	4	1: 4,000	2.4
3. Cancer, bile duct and liver		0	+	20	1: 1,000	1.5
4. Sarcoma of duodenum	First exam.	0	0	0	0	0
	Second exam.	+	+	4	1: 600	3.4
5. Cancer of papilla of Vater		0	+	12	1: 4,300	1.2
6. Cancer of papilla of Vater	First exam.	+	+	24	1:30,000	3.3
	Second exam.	0	+	6	1: 6,000	2.1
7. Cancer of papilla of Vater		0*	0	0	0	0
8. Cancer of papilla of Vater		+	+	12	1: 4,300	2.4
9. Cancer of terminal bile duct and pancreas		0*	0	0	0	0
10. Cancer of terminal bile duct and pancreas		0	0	0	0	0
11. Cancer of head of pancreas; chronic pancreatitis		0	Diminished Ferments	6	1: 430	0
12. Cancer of head of pancreas	First exam.	+	+	24	1:10,000	1.5
	Second exam.	0	+	9	1:10,000	1.5
13. Lymphosarcoma of duodenum		0*	0	0	0	0
14. Carcinoma of hepatic duct		0	Diminished Ferments	0	1: 430	0

* Blood present in the duodenal contents.

In the third case, while the laparotomy sinus persisted in giving exit to bile, duodenal examination demonstrated a fairly free flow of bile into the intestine, only a slight diminution being noted. The pancreatic ferments were again normally present. In this case, the physical condition of the patient being poor, secondary operation for closure of the sinus had been delayed because of the fear of a secondary or newly formed carcinoma of the bile-duct. The free flow of bile removed in great part this fear; radical intervention was again attempted and stricture of the bile-duct, together with more calculi, was found.

Thus it is seen that postoperative stricture of the bile-duct resulting from the operation of choledochotomy may be complete or incomplete. Complete obstruction of the duct may here be mistaken for carcinoma of the biliary system, though the latter condition has never been seen clinically in my limited experience to occur anew so soon after a primary operation for calculus. A carcinoma, however, may have been overlooked at the primary operation. Partial stricture of the choledochus following choledochotomy makes improbable the existence of a neoplasm and allows the surgeon to extend the time for a natural closure of the abdominal sinus.

NEW GROWTHS INVOLVING THE BILIARY SYSTEM

There are fourteen cases in this series (Table 3), comprising both carcinoma and sarcoma, subdivided into two groups: (1) new growths not involving the pancreas or its excretory ducts, and (2) new growths originating in or involving the pancreas and its duct. The first group includes neoplasms that implicate the biliary system in its course from the beginning of the extrahepatic portion to its entrance into or alongside of the pancreas. There are three such illustrations in this series. (Cases 1, 2, and 3, Table 3.) These are cases of cancer of adjacent organs involving the choledochus by direct extension. They invariably present complete absence of bile from the duodenum; the pancreatic duct is, as would be expected, always patent.

The second group includes those new growths involving the pancreas and its ducts. Eleven cases are mentioned under this division, including carcinoma and sarcoma. (Cases 4 to 14, inclusive, Table 3.) Six of these eleven cases (55 per cent.) presented complete absence of both bile and pancreatic ferments from the duodenum. The diagnosis possible when both ducts are completely obstructed is an absolute one, as no condition has yet been seen which can be confounded with it.

In the remaining five cases, the diagnosis from the duodenal examination was more complicated, owing to the fact that secondary ulceration of the new growth had released some of the pent-up secretions. Yet in four of these five cases the complete absence of bile at some time made possible the diagnosis of neoplasm. In the fifth, an ulcerating tumor of the papilla of Vater, and examination of the duodenal contents demonstrated the presence of abundant bile and pancreatic ferments, in spite of persistent jaundice. (Case 8, Table 3.) Fever, intestinal hemorrhage and rapid progressive emaciation, however, corroborated an evident clinical diagnosis.[2]

In a series of over 120 general cases, blood in the duodenal contents has been encountered only three times, two of these cases being proved carcinomas of the papilla of Vater, and the third a case of abdominal new growth whose exact nature was not ascertained. The association of bloody duodenal contents with new growth is evident from these figures, yet it must be borne in mind that this series includes no instances of duodenal or gastric ulcer of non-malignant type. Bondi,[3] in a much smaller series of cases, reports finding blood in many instances, and denies its significance as an indication of ulceration. Chase and Myers,[4] in a series of twenty-nine cases, found no blood in any of their examinations, nor did Frank[5] or Einhorn,[6] working with fairly large series. I would be inclined to attribute the frequent finding of blood by Bondi to a difference of technic, too much force being brought to bear in aspirating the contents of the duodenum. Further data, however, should be collected before bloody duodenal contents can be accepted as an evidence of ulceration, or new growth.

In review of the fourteen cases of neoplasm, thirteen presented a complete closure of the bile-duct; this is a reliable sign of the diagnosis of new growth. Six cases gave the additional evidence of closure of the pancreatic duct, further localizing the lesion at the junction of the bile and pancreatic systems in the head of the pancreas. The latter sign is an infallible one.

TABLE 4.—PANCREATITIS

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Acute pancreatitis	±	Markedly diminished	0	0	1.8
2. Chronic pancreatitis	+	±	—	1: 3,000	2.7
3. Chronic pancreatitis	0	±	6	1: 430	—
4. Chronic pancreatitis, First exam.	0	±	0	1: 4,300	0
Second exam.	±	±	0	1: 3,000	2.0
5. Chronic pancreatitis	+	±	0	1: 3,000	0

HYPERTROPHIC HEPATIC CIRRHOSIS

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Hypertrophic cirrhosis of liver	++	+	27	1:18,000	
2. Hypertrophic cirrhosis of liver	++	+	15	1: 4,000	1.7
3. Hypertrophic cirrhosis of liver	++	+	12	1:30,000	6
4. Hypertrophic cirrhosis of liver	+	+	4.5	1:10,000	3.9
5. Hypertrophic cirrhosis of liver	+	+	20	1:30,000	2.1
6. Hypertrophic cirrhosis of liver, pancreatic infect.. First exam.	++	+	0	1: 430	0
Second exam.	++	+	0	1: 4,300	0

TABLE 5.—UNCLASSIFIED JAUNDICE CASES

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Hemolytic icterus	+	+	21	1:10,000	1.3
2. Pylephlebitis	+	+	15	1: 4,300	2
3. Syphilitic hepatitis	+	+	18	1: 600	5.7
4. Syphilitic hepatitis; diabetes	+	++	15	1:30,000	16.2
5. Syphilitic hepatitis	+	+	6	1: 4,300	0.7
6. Chronic endocarditis; jaundice	+	+	18	1: 4,300	1.5

PANCREATITIS

In one case of acute suppurative pancreatitis, bile was scant; only a trace of one of the three principal ferments of the gland was present. In four instances of chronic pancreatitis the diagnosis was made by the finding of diminished ferments in the duodenal contents (Table 4). The diminution in the strength of the ferments was unquestionable and marks a deviation from the normal figures for the enzyme values as found in this large series.

As regards bile, the free entry of bile into the duodenum is no index of the extent of the disease; in two instances bile was entirely unobstructed; in the third case bile was only scantily present (on another examination, absent). This was a case of chronic sclerosing pancreatitis, resulting in the complete strangulation of the bile-duct and pancreatic tissue by the cirrhotic process. The fourth case was complicated by a small, probably secondary carcinoma at the head of the pancreas near the choledochus. In this case, no bile was found in the duodenum and the ferments were also found markedly deficient. The laboratory diagnosis of combined neoplasm and chronic inflammation was confirmed at the necropsy.

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[2] This subject is more fully considered in an article published in the American Journal of the Medical Sciences, 1914, cxlviii, 839.

[3] Bondi: Arch. f. Verdauungskr., 1913, xix, 692.

[4] Chase, A. F., and Myers, V. C.: The Examination for Diagnostic Purposes of the Enzyme Activity of Duodenal Contents, Arch. Int. Med., December, 1913, p. 628.

[5] Frank: Arch. f. Verdauungskr., 1912, xviii, 121.

[6] Einhorn: Am. Jour. Med. Sc., 1914, cxlviii, 490.

Thus it is seen that the duodenal contents afford a good basis for the diagnosis of pancreatitis, both in the diminution of enzymes and, when it occurs, diminution of the bile.[7]

HYPERTROPHIC CIRRHOSIS OF THE LIVER

Six cases were encountered in the course of four years. The result of duodenal studies is an almost uniform finding of a superabundance of bile, and an overactivity of pancreatic ferments (Table 4). When quite typical, one cannot mistake the chemical evidence. The bile is thin, light yellow and watery, and flows in large amounts; yet there is no dilution of the strength of the ferments, for here the highest figures, particularly for trypsin, are seen.

MISCELLANEOUS CASES (Table 5)

In this category appear:

1. Three cases of syphilitic hepatitis, with jaundice. In two of them, bile and enzymes lacked any abnormal characteristics. In the third (Case 4, Table 5) the typical chemistry of a non-specific hypertrophic cirrhosis occurred.
2. A case of hemolytic jaundice, acquired type; duodenal contents were normal.
3. A case of pylephlebitis.
4. A case of chronic endocarditis and enlarged liver, with jaundice. In these cases nothing abnormal was noted.

SUMMARY

Passing in review the most evident features of duodenal content examinations in the various pathologic conditions, we note the following:

Cholecystitis and cholelithiasis usually cause temporary, and then only partial, diminution in the bile outflow; pancreatic ferments remain normal unless a complicating pancreatitis is present.

Catarrhal jaundice has no characteristic changes.

In impacted common duct stone, even in the presence of long-standing jaundice, bile and ferments usually enter the duodenum quite readily. Only one exception to this rule has so far been noted. The real value of this report lies in its contrast with that in neoplastic obstructions.

In benign, postoperative stricture of the bile-duct, the obstruction to bile may be partial or absolute.

In thirteen out of fourteen cases of icterus due to neoplasm (93 per cent.) the obstruction to bile was absolute. In six instances (43 per cent.) the external pancreatic secretion was, in addition, completely shut off. Secondary ulceration of the new growth may, for a time, allow leakage of small quantities of one or the other secretion. Rarely, as in tumors of the pancreas itself, no obstruction to the ducts is observable, and the enzymes of the gland may themselves be normally present.

Blood in the duodenal contents is strongly suggestive of new growth.

Hypertrophic cirrhosis of the liver, with long-standing jaundice, shows not only no obstruction to bile, but on the contrary, a hypersecretion of both bile and ferments.

In pancreatitis, the entrance of bile into the duodenum is frequently obstructed; in advanced cirrhosis of this organ, the obstruction to bile may be a complete one. Pancreatic ferments readily enter the duodenum, but the marked diminution in the strength of these ferments is characteristic of the disease.

To the clinician at the bedside there is no more difficult problem to solve than the causation of a long-continued jaundice. There may be as much, if not more pain with neoplastic obstruction of the bile-ducts as with impacted calculi. Courvoisier's law of a tense and enlarged gall-bladder as an index of new growth is valuable when positive; the inability to feel an enlarged gall-bladder in persons difficult to palpate often leaves this valuable sign in doubt. Chronic pancreatitis, a not very uncommon disease, may give a clear history of pain and may present a large, tense gall-bladder with persistent and severe icterus. In all three conditions disturbance of nutrition and loss of weight occur. Intestinal hemorrhage, associated with a remittent temperature, speaks strongly for an ulcerating neoplasm. The finding in the stool of free fat and abundant undigested muscle fibers, when they do occur, is characteristic of pancreatitis.

Fortunately, the duodenal contents are often of the greatest value in those most difficult and frequent cases in which pathognomonic clinical signs are absent. If the chemical examination shows both ducts open, a benign stenosis is most likely; partial closure of the bile-duct with open pancreatic duct usually points to an impacted common duct stone. Complete closure of the one or the other duct generally means neoplasm, particularly when blood is present in the duodenal contents. Complete closure of both ducts occurs only in new growth. Definite diminution of ferments points clearly to pancreatitis; this is usually accompanied by some diminution of bile.

Lastly, and with greatest emphasis, it must be said that when the duodenal content examination is not well defined, pointing to a result of a definite pathologic process, the interpretation of the laboratory findings must be influenced by the clinical points of the case, as well as by the examination of the stool.

One of the most vulnerable points in duodenal content diagnosis is in the following type of case: A middle-aged man presents the clinical picture of obstructive jaundice probably of malignant origin. The examination of duodenal contents shows the presence of both bile and ferments, the latter in undiminished strength. This finding would indicate a benign rather than a malignant condition. And yet, should blood be present in the stools, grossly or chemically, should irregular fever and leukocytosis occur, the case may more rationally be diagnosed as an ulcerating carcinoma, probably of the papilla of Vater. In such an instance, a knowledge of the pathology of such tumors must be recalled, and their tendency to ulcerate and necrose be remembered. The duodenal findings must be overruled by the stronger clinical evidence, testifying to the fact of evident ulceration, hemorrhage and ascending infection of the bile passages. If the duodenal content examination be repeated, one may be fortunate enough, as has more than once occurred to me, to find complete absence of bile; this is a confirmation of the clinical diagnosis. Fortunately, in about 80 per cent. of the cases of tumor, complete absence of bile is ascertained at the very first examination.

All in all, rules may be formulated for the occurrence of certain findings in each of the pathologic conditions usually encountered; these rules are based on the *majority* of the chemical examinations in such cases; exceptions to the rules, as to all biologic rules, do occur.

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[7] In a subsequent paper, the subject of pancreatitis, its duodenal findings and metabolism studies will be more fully considered.

ILLUSTRATIVE CASES

To illustrate concretely the value of duodenal content examination in differentiating icteric conditions, a few well-chosen examples are appended.

Case 1.—(From the medical service of Dr. N. E. Brill).—A. B., man, aged 43, had suffered for twelve years from loss of appetite, with occasional attacks of nausea and vomiting. Two weeks before being seen he suddenly noted jaundice, and before entering the hospital had several attacks of mild abdominal cramps. Duodenal content examination showed abundant bile and ferments. A diagnosis of benign stenosis, probably of stone, was offered. Within a few days the icterus began to clear up; the patient was kept under observation for several weeks, and discharged eventually with the diagnosis of cholelithiasis.

Case 2.—(From the medical service of Dr. E. Libman).—L. K., a woman aged 68, suffered for four months with jaundice, pruritus, loss of weight and occasional attacks of abdominal pain. Repeated examinations of duodenal contents revealed complete absence of both bile and ferments. Blood was present in the aspirated material; a definite diagnosis of new growth was made. Advancing anemia, melena and the later occurrence of signs of pancreatic gland destruction (typical stool changes) occurred. The necropsy demonstrated a typical advanced carcinoma of the terminal portion of the bile-duct invading the pancreas.

Case 3.—(From the surgical service of Dr. Charles Elsberg).—M. S., a woman aged 48, suffered for three months with weakness, emaciation and jaundice. Duodenal contents demonstrated complete absence of both bile and ferments; blood was also present. A definite diagnosis of tumor was made. This was confirmed at the operation, at which a large new growth was felt involving the duodenum and head of the pancreas.

Case 4.—(From the medical service of Dr. N. E. Brill).—L. J., man, aged 48, complained for eight days of painless jaundice. His physical examination was negative except for slight hepatic enlargement. Duodenal examination demonstrated the presence of both bile and ferments. A diagnosis of catarrhal jaundice was offered; within a few days the jaundice began to disappear and the patient was discharged, apparently well.

Seven weeks later, he was readmitted to the hospital, deeply jaundiced, running a septic type of temperature and showing blood in his stools. Duodenal contents now demonstrated complete absence of bile; ferments were normally present. The duodenal diagnosis was now one of new growth, with ulceration. At the necropsy an ulcerated carcinoma of the papilla of Vater was ascertained.

It is evident that the first duodenal examination was made at a time when advanced ulceration had liberated the ducts. The second examination, a few weeks later, and after renewed growth on the part of the tumor, more nearly approached the typical chemical data of neoplasm.

Case 5.—(From the service of Dr. N. E. Brill).—S. R., man, aged 37, suffered for seven weeks with jaundice and diarrhea. He had had at the beginning of his illness an attack of abdominal cramps. Loss of weight was marked. The physical examination revealed an enlarged liver and palpable gall-bladder. Duodenal examination showed absence of bile and diminished pancreatic ferments. A diagnosis of sclerosing pancreatitis was made. A confirmatory duodenal examination, made some days later, showed some bile entering the intestine and pancreatic ferments again markedly diminished. At the necropsy chronic intralobular pancreatitis was definitely established as the cause of the symptoms.

41 West Eighty-Third Street.

Preventogram.—Fresh, clean air is the best antidote, as well as one of the best remedies, for pulmonary tuberculosis.—*Buffalo Sanitary Bull.*

GASTRO-INTESTINAL STUDIES

VI. THE IMPOSSIBILITY OF INTERPRETING THE FINDINGS OBTAINED BY THE CUSTOMARY EXAMINATION OF THE TEST MEAL *

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It is my purpose in this paper to show that it is practically impossible to interpret correctly the findings, or rather the figures obtained from a test meal extracted in the usual manner. The literature is full of the inconsistencies encountered in ordinary gastric testing and strange results, oftentimes in discord with clinical symptoms, have caused the clinician to rely less and less on the examination of the test meal as an index of gastric function. And yet the examination of the gastric juice must always remain the only true method in the determination of gastric function. Two things stand out prominently in the whole category of functional testing: (1) the fact that a definite stimulus produces under identical conditions practically always a constant result; and (2) anatomic and pathologic changes result almost always, although not invariably, in change in function. If the gastric response did not in a way reflect the condition of the organ, it would be the first organ which does not follow known physiologic laws. As the urine will, despite the efforts of certain clinicians, represent and reflect the condition of renal permeability and renal work, so must the secretory output of the stomach reflect the condition and working response of that particular organ. But it is as absurd to expect information of gastric function from the examination of a single specimen at an isolated phase as it is to obtain an accurate idea of renal efficiency from the examination of a single specimen after the administration of phenolsulphonephthalein, for example. That it is working, perhaps we can say; how it is working, it is impossible to say. The examination of the gastric juice must remain, together with a determination of its motor function, the true methods for estimation of gastric function, and newer knowledge only begins to suggest the multitude of causes which can react on the elaboration of the secretion—the condition of the mucosa, the actual tonicity of the vagus and sympathetic filaments, the condition of hyper- or hypo-activity of the ductless glands, the elaboration of hormones and secretagogues, the intactness of the evacuating system, the presence of inhibitory or stimulating, toxic, chemical, or irritating substances in the blood, and finally, the question of excretion—which all play a part in elaboration and subsequent character of the gastric secretion. But more than this, the addition of ulcerous, inflammatory and neoplastic products all lend, in a certain sense, their properties in adding to or modifying the final product. The discussion of these points is entirely out of place in this paper. The important point is the impossibility of interpreting the findings after the routine method employed at present.

In the literature the idea of making a fractional examination of gastric digestion is by no means new. Perhaps to Hayem belongs the credit of studying most carefully the secretory output in various conditions, but his method was crude and his curves show the irregular intervals necessitated by such an examination. Practically all examinations which were conducted on the gastric secretion in the human subject used the method by which the subject received a definite test meal which was emptied in ten minutes on one day, on the following day in twenty minutes, on the third day after thirty minutes, and so on, until the entire cycle of gastric digestion was completed. Many authors have investigated the gastric secretion at various periods, Ewald and Boas,[1] then Reichmann,[2] v. Jaksch,[3] and Kornemann,[4] in 1885, published a most comprehensive series of observations on the digestion of milk in a healthy young man of 20. After habituating his subject to the passage of the tube, he commenced his series, removing the milk on successive days after increasing time intervals.

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* From the Laboratory of Physiological Chemistry of the Jefferson Medical College.

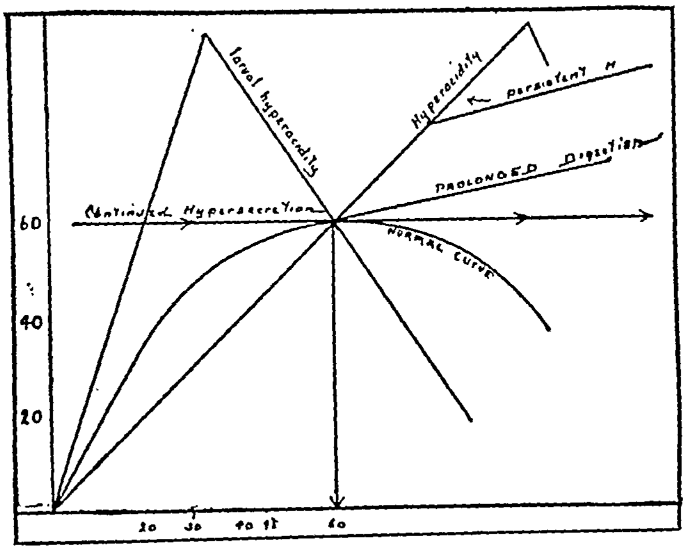

Fig. 1.—Possibilities in the interpretation of normal figures of the one-hour examination.

Von Jaksch[3] records a series of tables indicating the effect of milk, tea, carbohydrates and meat in children. These were administered and removed at various intervals by means of the sound. His observations are of interest and he shows that the position of the high point differs according to the diet ingested. He makes the statement, however, that after the administration of weak tea and saccharin, free HCl is detected in 78 per cent. of the cases in three-quarters of an hour, but after feeding milk or meat he could detect its presence in the first quarter of an hour.

Schule's[5] observations are quite complete, but unfortunately restricted to four individuals, although they are repeated, and different articles of diet were investigated. After tea and toast, for instance, while the majority of high points were encountered at sixty minutes, several were found at forty-five and seventy-five minutes, respectively.

Kornemann[4] gives fifty minutes as the point at which the free HCl reaches its height after the administration of a test breakfast. With 35 grams of roll and 250 grams of tea, he finds the stomach empty in two and one-half hours.

Ehrenreich,[6] perhaps, published the first satisfactory results of a complete examination of the gastric cycle and utilized for that purpose a Nelaton catheter. He showed that examinations at quarter-hour intervals demonstrated that the pepsin concentration rapidly reached its maximum (after twenty to thirty minutes) and then had a tendency to remain constant, while the acid concentration reached its maximum only after seventy minutes. Gregerson[7] criticizes the method, inasmuch as apparently a great deal of saliva and mucus is formed by Ehrenreich's method. Some twenty-two cases were enumerated by Ehrenreich, insufficient to draw any interpretation of the interesting findings which he recorded.

Gregerson's cases, while few in number, are interesting and instructive, but the method, as were other methods enumerated above, is entirely impractical.

The value of the fractional tube lies in the fact that by means of its weight, the tip seeks the bottom of the stomach by gravity; secondly, with few exceptions, it is well borne and if the patient is encouraged to expectorate any saliva, the specimens are clean and representative of the gastric contents, while at any moment the entire gastric content can be evacuated. It is therefore absolutely impossible to form any opinion regarding the interpretation to be drawn from an examination of the gastric juice in the one-hour interval.

1. This point records but one phase in the ever changing cycle of gastric digestion.
2. A large number of observations have shown that this point is by no means the high point or the representative one.
3. Many changes may both precede or follow this point.
4. Many forms of hyperacidity, hypersecretion, occult bleeding are entirely overlooked in this way.
5. Delay in digestion may mean that figures at the one-hour point may be doubled at the second hour.
6. No idea of evacuation or the motor function of the stomach can be obtained by this method.

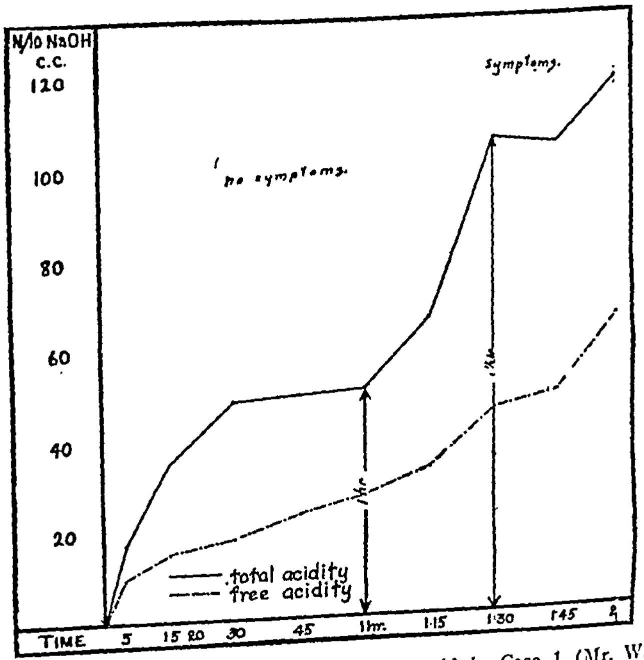

Fig. 2.—Curves of total acidity and free acid in Case 1 (Mr. W.). Note the difference in the figures at the period and the findings at one and a half hours.

7. That entirely erroneous conclusions may be drawn must be evident from the following cases.

These cases are drawn from more than 300 complete fractional examinations of the entire gastric cycle after the administration of the Ewald meal and almost 200 fractional examinations after the administration of

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1. Ewald and Boas: Virchows Arch. f. path. Anat., 1885, ci, 325.
2. Reichmann: Ztschr. f. klin. Med., 1885, xxiv, 565.
3. Von Jaksch: Ztschr. f. klin. Med., 1890, xix, 383.
4. Kornemann: Arch. f. Verdauungskr., 1912, p. 369.
5. Schule: Ztschr. f. klin. Med., 1895, xxvii, 461.
6. Ehrenreich: Ztschr. f. klin. Med., 1912, p. 231.
7. Gregerson: Arch. f. Verdauungskr., 1913, xix, 263.

various food substances, in normal individuals. They are merely given to demonstrate the impossibility of drawing any conclusions from the customary gastric examination. For instance:

1. The test meal at the one-hour period reveals normal total acidity and free acid figures.

So-called normal total free acid figures at one hour may mean (1) perfectly normal digestion, such as has been recorded elsewhere; (2) but it may mean something entirely different. A glance at the diagram (Fig. 1) will show the possibilities (1) a normal curve; (2) high figures following this point, in reality the tardive hyperacidity of the French, either sustained or abrupt and with or without hypersecretion; (3) it may mean an absolute constant acidity such as is seen in certain hypersecretion or obstructive cases; (4) it may mean hyperacidity after the manner of the so-called Strauss larval hyperacidity preceding the one-hour point and falling at that point to or near normal. At the same time all forms and types of motor aberrations may occur.

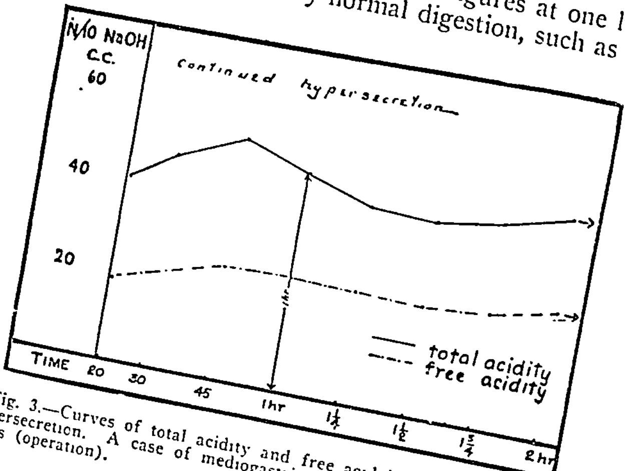

Fig. 3.—Curves of total acidity and free acid in Case 4. Continued hypersecretion. A case of mediogastric contraction from gastric adhesions (operation).

A. Normal figures at the one-hour point may be followed by hyperacid figures at the two-hour point. This s illustrated by the cases in Table 1.

ABLE 1.—TOTAL ACIDITY AND FREE ACID AT ONE- AND TWO-HOUR PERIODS

Case 1. Mr. W.			Case 2. Mr. E.		
Time, Hours	Total Acidity	Free Acid	Time, Hours	Total Acidity	Free Acid
1/12	17.2	10.0	1/6	16.0	8 5
1/4	35.2	15.4	1/4	14.0	8.0
1/2	48.1	18.0	1/2	17.0	8 0
3/4	49.0	23.2	3/4	37.5	28.5
1	54.4	27.0	1	53.0	44.5
1 1/4	66.0	33.0	1 1/4	69.0	60.5
1 1/2	106.0	45.3	1 1/2	94.0	85.5
1 3/4	104 5	48.3	1 3/4	93.0	83.0
2	118.6	64.7	2	85.0	76.0
			2 1/3	19.0	11.5

In these cases, the discrepancy between the one-hour findings and the curve is pronounced. Case 1 (Fig. 2) shows two-hour figures more than double those obtained at the one-hour point and an added factor, hypersecretion, was observed. Furthermore, all the subjective symptoms occurred after the one-hour point. n the second case the symptoms were pronounced late digestion and the patient was free from symptoms at the one-hour point.

B. Normal figures at the one-hour point may be preceded by hyperacid figures. Such a case is shown in Table 2, which emphasizes the possibilities of the so-called Strauss larval hyperacidity.

TABLE 2.—NORMAL TOTAL AND FREE ACIDITY AT ONE-HOUR POINT PRECEDED BY HYPERACIDITY

Time, Hours	Case 3, Mr. F. Total Acidity	Free Acid
1/12	6.7	Trace
1/4	19.8	7.5
1/2	25.3	14.0
3/4	75.7	53.3
1	43.7	24.0
1 1/2	18.2	9.5
1 3/4*	24.5	11.5

* Stomach empty—hypermotility.

C. Normal figures at the one-hour point may be only part of a continued hypersecretion or obstructive phenomenon. This is seen in the cases in Table 3.

TABLE 3.—NORMAL FIGURES AT THE ONE-HOUR POINT

Case 4 (Fig. 3)			Case 5		
Time, Hours	Total Acidity	Free Acid	Time, Hours	Total Acidity	Free Acid
1/3	40.7	18.5	1/12	49.9	36.4
1/2	47 0	....	1/6	57.1	45.2
3/4	50.3	25.6	1/4	59.2	42.0
1	48.2	25.9	1/2	60.8	45.4
1 1/4	43.5	25.0	3/4	58.2	44.0
1 1/2	42.7	24.3	1	61.2	46.0
1 3/4	44.9	25.7	1 1/4	62.9	47.8
2*	48.4	28.5	1 1/2	61.7	47.2
			1 3/4	67.6	44.6
			2	68.4	49.6
			2 1/2	68.0	48.6

* Marked hypersecretion throughout.

Therefore normal figures at the one-hour point might be of varied significance, depending on the secretory phenomena which have preceded or followed this point.

The first variety, namely, the normal figures at one hour, followed by figures indicating hyperacidity in later phases of digestion, is particularly common.

2. Hyperacid figures at one hour may be of varied significance depending on the character and duration of the findings, and this is only revealed by fractional testing. The cases in Table 4 (Figs. 4 and 5) both reveal figures indicating a hyperacidity at one hour but a study of the curve will reveal the difference in their significance.

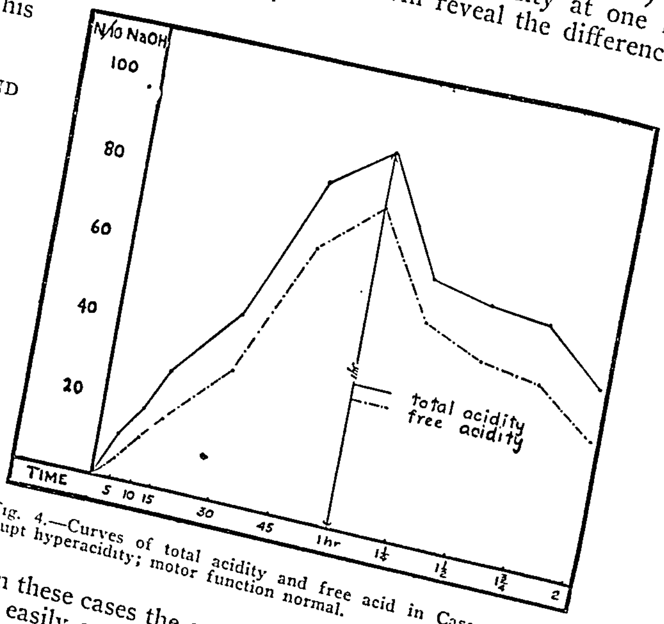

Fig. 4.—Curves of total acidity and free acid in Case 6 (Mr. J.). Abrupt hyperacidity; motor function normal.

In these cases the one seen to be more or less abrupt was easily controlled by simple dietetic measures; the other dominated the entire gastric phase after the ¾-hour period and was accompanied by hypersecretion.

3. Subnormal figures at the one-hour point may indicate in general a subnormal curve. They may also

Grosser,[7] on a careful critical review of the data, concludes that the balance of evidence from this kind of experiment is in accord with the view that no difference exists whether the phosphorus is supplied in organic or inorganic form.

Hart, McCollum and Fuller[8] found that in the case of growing pigs the quantity of phosphorus necessary is not dependent on the nature (organic or inorganic), but on the needs of the animal. Pigs fed on rations with extremely low phosphorus content at first developed as well as controls, but later there was loss of weight, followed by collapse. Supplementing this low phosphorus diet with either calcium phosphates or organic phosphorus compounds sufficed to produce normal growth and development. The phosphorus in the organic form gave no better results than the inorganic phosphates. McCollum, Hart and Humphrey,[9] working with a cow, conclude that neither the form nor quantity of potassium, magnesium or phosphorus in the diet affected the percentages of these elements in the milk.

Fingerling,[10] comparing the influence on the milk secretion of the feeding of organic phosphorus with that of inorganic phosphorus, found no influence on the quantity, amount of total solids, or percentage of calcium and phosphorus. The organic phosphorus was fed in the form of lecithin, phytin, casein and nucleic acid, and the inorganic as disodium phosphate. He concludes that the organism can satisfy its needs just as well with inorganic phosphates as with organic phosphorus. Other investigators (Wendt,[11] Holsti,[12] Gregerson[13]) have shown that the organism can synthesize organic phosphorus compounds out of inorganic phosphates. In regard to the relative ease and completeness of this synthesis, Fingerling has carried out some very interesting experiments on geese, and McCollum, Halpin and Prescher on hens.

Fingerling[14] selected a flock of geese and fed them during one year on food containing practically no organic phosphorus but only inorganic phosphates. The next year they were fed on a diet rich in organic phosphorus. It was found that the number of eggs laid, their weight and content in lecithin, nucleic acid and phosphorus were the same on the organic-phosphorus-free diet as on the one rich in organic phosphorus. McCollum, Halpin and Prescher[15] found hens capable of synthesizing complex phosphatids, for when fed on a phosphatid-free diet, they laid eggs containing the normal content of lecithin.

The recent experiments of Osborne and Mendel[16] on the amino-acids necessary for maintenance and growth are evidence in the same direction. Rats can be maintained and grow on a diet of phosphorus-free protein and an inorganic salt mixture, and when the growth curve diverges from the normal on this diet, it can be restored by the addition of butter-fat,[17] which contains no phosphorus.

We see that the evidence is very convincing of the view that the animal organism can synthesize its complex organic phosphorus constituents from inorganic phosphates, and that organic phosphorus is of no more value as a food than inorganic. If the organic phosphorus compounds possess any particular efficacy over the inorganic, it is probably due to their containing substances that are necessary in traces to normal nutrition, and not to their organically bound phosphorus. These materials are undoubtedly furnished by any ordinary mixed diet, and in cases in which the introduction of phosphorus is desired to attempt to make possible the synthesis of organic phosphorus compounds in the body, the inorganic phosphates are entirely suitable for this purpose.[18]

ALBUMIN IN THE SPUTUM AS A DIAGNOSTIC AID *

C. BRUCE LOCKWOOD, M.D.

DETROIT

The suppression and cure of tuberculosis depend largely on an early diagnosis of the malady. Any laboratory method, therefore, which would be of value in our diagnosis, since both history and physical findings are often inadequate, would be very desirable.

Among the various methods for the diagnosis of tuberculosis which have been exploited from time to time is one, the albumin-sputum method, which has attracted attention off and on for nearly sixty years, but which never yielded sufficient satisfactory results to warrant its general adoption by clinicians.

REVIEW OF LITERATURE

In 1855 Biermer,[1] investigating this subject, always found albumin positive in acute bronchitis, in pneumonia and in edema of the lungs, but negative in chronic bronchitis and in tuberculosis, the latter showing much mucin.

Renk[1] found albumin negative in chronic bronchitis but always positive in acute bronchitis, pneumonia and tuberculosis, the latter showing from 0.11 to 0.49 per cent.

Bamberger,[1] Panow, Starkow and Lanz found considerable albumin in bronchitis and emphysema, as well as in tuberculosis.

Wanner, after boiling with salt solution and acetic acid, found much albumin in tuberculosis, while there was only a trace or negative in chronic bronchitis and in asthma.

Beranzon and Young[1] found albumin in both tuberculosis and bronchitis.

The observations of Roger and Levy-Valensi[2] gave stimulus to numerous investigators, including Lantz and Hertz,[3] Lecaplain,[4] Terreira,[5] Lesieur and Prires,[6] and many others, all of whom came to the conclusion that a negative test excluded tuberculosis, while a

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7. Grosser: Ergebn. d. inn. Med. u. Kind., *1913*, xi, 119.
8. Hart, McCollum and Fuller: Am. Jour. Physiol., 1908-1909, xxiii, 246.
9. McCollum, Hart and Humphrey: Am. Jour. Physiol., 1909, xxiv, 86.
10. Fingerling: Biochem. Ztschr., 1912, xxxix, 239.
11. Wendt: Skand. Arch. f. Physiol., 1905, xvii, 211.
12. Holsti: Skand. Arch. f. Physiol., 1909, xxiii, 143.
13. Gregerson: Ztschr. f. physiol. Chem., 1911, lxxi, 49.
14. Fingerling: Biochem. Ztschr., 1912, xxxviii, 448.
15. McCollum, Halpin and Prescher: Jour. Biol. Chem., 1912, xiii, 219.
16. Osborne and Mendel: Ztschr f. physiol. Chem., 1912, lxxx, 307, and articles in Jour. Biol. Chem., 1 12-1913.
17. Osborne and Mendel: Jour. Biol. Chem., 1913, xvi, *423*. McCollum and Davis: Ibid., *1913*, xv, *167*.

18. No attempt has been made to include a complete bibliography. A very good critical review of this question of the value of organic and inorganic phosphorus and the literature can be found in the article by Grosser in *Ergebnisse der inneren* Medizin und Kinderheilkunde, 1913, xi, 119.

* Tuberculous material from the Detroit Tuberculosis Sanatorium.

1. Quoted by Berkovitz and Rudas: Berl. klin. Wchnschr., 1913, l., 1752.
2. Roger and Levy-Valensi: Bull. et mém. Soc. méd. d. hôp. de Paris, Sept. 22, 1913; ibid., July 23, 1909; Presse méd., April 20, 1910; ibid., May 20, 1911.
3. Lantz and Hertz: Presse méd., July 18, 1911.
4. Lecaplain: Presse méd., March 11, 1911.
5. Terreira: Presse méd., April 15, 1911.
6. Lesieur and Prires: Paris méd., 1911, iv, 29.

positive test rendered the case very suspicious, but not absolutely confirmatory, since a positive test might occasionally be obtained in other conditions such as pneumonia, edema of the lungs, bronchopneumonia and cardio-renal disease, and that the test is generally negative in acute and chronic bronchitis.

Fishberg and Felberbaun,[7] often found the quantity of albumin infinitesimal or absent in chronic fibroid tuberculosis, but present in active cases, the amount bearing considerable relation to the activity of the process.

Fullerton,[8] investigating 100 cases, noted wide variations in the amount of albumin. He found that tuberculosis generally shows considerable albumin, but that in a small percentage of cases little or no albumin occurs, and that a positive reaction occurs in various diseases of the respiratory tract, such as pneumonia and bronchitis. He concluded that the albumin reaction was not reliable in diseases of the respiratory tract, and of only limited value in tuberculosis.

S. Acs-Nagy[9] decided that the determination of albumin has little importance for practical diagnosis.

J. Kauffmann[10] speaks highly of it, and applies it along with the tuberculin reactions. He found the test negative in bronchitis, but positive in kidney disease and pulmonary edema.

B. O. Works,[11] after precipitating with Esbach's reagent, concluded that most active tuberculosis cases show 2 per cent. or more, while improved cases show less than 2 per cent. and that a negative reaction excluded tuberculosis.

Scott[12] concluded that the test is of no value in the routine diagnosis of tuberculosis, because the reaction occurs in many other affections of the respiratory tract, and is negative in about 10 per cent. of positive pulmonary cases.

Berkovitz and Rudas,[13] who estimated the albumin by both the Kjeldahl and Esbach methods, found that the quantity of albumin in the sputum in respiratory diseases varied between two wide extremes, and concluded that it was of no diagnostic value.

E. Gelderblom[14] states that an increase or decrease of the albumin content of a tuberculous sputum points to an aggravation or improvement of the disease.

E. Hempel-Jorgensen[15] states that the results are not uniform. He found albumin negative in two out of fifteen tuberculous cases. He decides that considerable albumin might indicate tuberculosis, but all other inflammatory or destructive processes of the respiratory tract must be excluded, and concludes that the test is of little positive diagnostic value.

Holm and Himmelberger,[16] estimating the albumin by precipitating with potassium ferrocyanid and centrifuging, in their first communication concluded that the determination of the albumin in the sputum is one of the most important aids in diagnosis and prognosis of tuberculosis that has been introduced in recent years. Later[17] they seemed less enthusiastic, and stated that a negative reaction excludes tuberculosis, but a positive reaction is always present in pulmonary abscess, bronchopneumonia, lobar pneumonia and pulmonary edema, and a negative reaction is generally present in pharyngitis, bronchitis and asthma.

METHODS

The technic for estimating and detecting the albumin in the sputum has not been uniform, the earlier investigators chiefly using the more accurate Kjeldahl method, while most of the workers in the last four years have used slightly different technic of precipitating the mucin with dilute acetic acid, filtering and applying various albumin tests to the filtrate, such as the nitric acid contact test, the potassium ferrocyanid test, boiling, and for a quantitative determination, the Esbach test.

In all my cases I have first precipitated the mucin by mixing well one part of sputum with one part of 3 per cent. acetic acid and allowing to stand for some time, then adding one part of water, making a mixture of 33⅓ per cent. sputum, mixing well, filtering through gauze and then through a fine filter paper and using the clear filtrate.

TABLE 1.—TUBERCULOUS CASES

No.	Stage	Duration	Average P. M. Temperature	No. Bacilli, Gaffky	Phos. Alb.	Kjeldahl, Alb.
1	Mod. far advanced	7 months	99	III	0.5	
2	Far advanced......	5 years	99	III	0.375	
3	Far advanced	15 months	100	II	1.8	
4	Far advanced......	2 years	100	IV	1.0	2.3675
5	Far advanced......	2 years	98.6	III	0.3	
6	Mod. far advanced	15 months	98.6	II	0.3	
7	Far advanced......	Subacute prob. 20 years	99.3	II	1.95	
8	Far advanced; no cavities	6 months	101	II	0.9	2.1
9	Far advanced......	13 months	101	III	1.5	
10	Mod. advanced....	2 years	99.8	0	0.45	
11	Far advanced......	2 years	100	IV	0.15	0.80
12	Mod. advanced....	3 months	102	II	0.725	
13	Far advanced......	2 years	101	III	2.40 0.75	
14	Far advanced......	18 months	102	III	0.90 2.10 0.95	6.30
15	Mod. advanced.....	6 months	99.5	I	0.82	2.70
16	Far advanced......	5 years	99.5	II	0.45	1.3125
17	Far advanced......	3 years	100	II	1.8	
18	Mod. advanced.....	6 months	99	I	0.8	0.60
19	Far advanced......	3 years	99	III	1.05	0.7875
20	Far advanced......	14 months	100	IV	2.25	6.25
21	Far advanced......	3 years	99	III	4.6	1.00
22	Far advanced......	4 years	100	II	2.7	2.25
23	Chr. fibroid........	6 years	98.6	0	0.75	2.40
24	Far advanced......	4 months	99	II	0.23	1.20
25	Far advanced......	3 months	99	III	0.23	
26	Far advanced......	8 months	100	II	0.225	0.39375
27	Mod. advanced.....	3 years	95.5	IV	0.193	3.125
28	Far advanced......	1 year	99	III	0.07	2.5625
29	Far advanced......	4 years	99	II	0.375	0.9375
20	Mod. advanced.....	2 years	95.5	I	0.20	1.812

Reasoning on the assumption that in tuberculosis there is a digestion of lung tissue, in Tables 1 and 2 I have attempted to compare the albumin and products of albumin digestion found in tuberculous cases, and also to compare the precipitate obtained regarding the stage, duration and activity of the disease.

The clear 33⅓ per cent. filtrate was placed in an Esbach tube to the U mark, then filled to the R mark with a phosphotungstic acid solution, moderately agitated and allowed to stand twenty-four hours, when reading was taken, multiplied by 3 (dilution) and changed to percentage.

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[7] Fishberg and Felberbaum: Med. Rec., New York, Oct. 21, 1911.

[8] Fullerton: Glasgow Med. Jour., July, 1912.

[9] Acs-Nagy, S.: Wien. klin. Wchnschr., Nov. 28, 1912.

[10] Kauffmann, J.: Beitr. z. klin. d. Tuberc., 1913, xxvi, No. 3.

[11] Works, B. O: The Quantitative Examination of Albumin in the Sputum in Pulmonary Tuberculosis, The Journal A. M. A., Oct. 26, 1912, p. 1537.

[12] Scott, James R.: A Critical Study of Albumin Reaction in the Sputum of Tuberculosis Patients, The Journal A. M. A., Feb. 8, 1913, p. 440.

[13] Berkovitz and Rudas: Berl. klin. Wchnschr., 1913, L, 1752.

[14] Gelderblom, E.: Deutsch. med. Wchnschr., Oct. 9, 1913.

[15] Hempel-Jorgensen, E.: Albumin Reaction in Sputum, Beitr. z. klin. d. Tuberc., 1913, xxvi, 350.

[16] Holm, M. L., and Himmelberger, L. R.: Quantitative Determination of Albumin in Sputum with Potassium Ferrocyanid, The Journal A. M. A., Jan. 3, 1914, p. 20.

[17] Holm and Chambers: Jour. Mich. State Med. Soc., April, 1914.

The solution used in precipitating consisted of:

Phosphotungstic acid	1.0 gm.
Hydrochloric acid, concentrated..........	5.00 c.c.
Alcohol, 95 per cent. ....q. s. ad.	100.00 c.c.

While the solution is known to precipitate other things besides albumin and products of albumin digestion, it is given preference to the Esbach reagent in quantitative determination of albumin in the urine.

Also in Tables 1 and 2 I have estimated the albumin in many cases by means of the more accurate Kjeldahl method, using 5 c.c. of the clear 33⅓ per cent. sputum filtrate, estimating the total nitrogen in grams, and multiplying by 3 (dilution) and by the factor 6.25 to obtain the albumin, and expressing it in percentage.

TABLE 2.—NON-TUBERCULOUS CASES

No.	Diagnosis	Duration	Temperature	Phosphotungstic Acid Ppt. of Alb. Per Cent.	Kjeldahl Est. of Alb. Per Cent.
1	Subacute bronchitis...	3 months	Normal	0.3	
2	Chronic bronchitis.....	5 years	Normal	0.4	
3	Subacute bronchitis and infected bronchial glands	4 weeks	99.5	0.15	
4	Subacute bronchitis...	3 weeks	Normal	0.45	1.93
5	Subacute bronchitis...	4 weeks	Normal	0.3	1.062
6	Subacute bronchitis...	5 weeks	Normal	0.375	8.125
7	Acute bronchitis.......	3 days	100	0.15	0.50
8	Subacute bronchitis...	3 weeks	Normal	0.50	2.60
9	Chronic bronchitis.....	....	Normal	0.15	0.80
10	Acute bronchitis.......	4 days	100-102	0.85	
11	Subacute bronchitis...	4 weeks	Normal	0.34	0.85
12	Asthma	3 years	Normal	0.225	1.0625
13	Emphysema	5 years	....	0.225	1.17
14	Emphysema	....	Normal	0.10	0.50

COMMENT ON TABLES

From the tabulations it will be seen that albumin was found positive in all cases examined, and while the average quantity was found higher in the tuberculous cases, there was such a wide variation in the quantity in both the tuberculous and non-tuberculous that this could not possibly be used as a diagnostic aid.

It will also be seen that the quantity of albumin in the tuberculous cases seemed to bear no relation to the duration, stage, temperature or number of bacilli present. It might be stated that in those cases in which two precipitation tests were made, the tests were only one and two days apart, yet a wide variation is noted in the result.

In Cases 19 and 29 inclusive, Table 1, and 5 to 14 inclusive, Table 2, the filtrate was also tested for albumin by the Heller test, and by adding a drop or two of potassium ferrocyanid and noting the cloud, with the result that all the non-tuberculous were as positive as the tuberculous, with the exception of Case 19, which was negative to potassium ferrocyanid, but positive to the nitric acid contact test.

In the foregoing observation, albumin was practically always present in sputum, regardless of the disease.

In tuberculous patients, the amount seemed to bear no relation to the stage, duration or activity of the disease process, and it now seems, therefore, that the albumin reaction or the quantitative determination of albumin in the sputum had no practical value in the diagnosis of respiratory affections.

603 Kresge Building.

Preventogram.—"So long as there is a neighbor who cultivates thistles, dandelions, etc., in his fields or lawns, it is well nigh impossible for the careful, industrious neighbor to secure the freedom he pays for by his own care. Parents have a right to insist that their children be not infected by a careless neighbor's children."—Pittsburgh *City's Health.*

INFECTIVE LYMPHOID GROWTHS OF THE LARYNGOPHARYNX, SECONDARY TO SINUS SUPPURATION

A PREVIOUSLY UNDIFFERENTIATED TYPE OF LYMPHOID HYPERPLASIA *

W. E. CASSELBERRY, M.D.
Professor Emeritus of Laryngology and Rhinology in Northwestern University Medical School; Laryngologist to St. Luke's Hospital
CHICAGO

The present conviction that rheumatoid, cardiac and pyemic diseases emanate from foci of infection often situated in the tonsils, and the occurrence, which I have repeatedly noted, of nasal sinus suppuration, together with secondary infective tonsillitis, and again, with infective hyperplasia of the minor lymphoid groups, render important the evidence which serves to establish the microbic origin of the lymphoid enlargement, and tends to substantiate the sinus disease as the primary source of infection.

Though typical sinus suppuration makes itself obvious, the discharge need not amount to actual pus, the disease being prevalent in attenuated, yet virulent forms, which are readily overlooked.

The particular qualities noted as characterizing infective lymphoid hyperplasia are: a conspicuous enlargement of the smaller clusters and single follicles, an apparently diffused lymphoid infiltration of adjoining tissue, and a decided disposition, in consequence, to redevelopment after excision. In addition to these, recognition of its situation as being in the pathway of a sinus discharge is almost essential to distinction from ordinary follicular hypertrophy.

In the vicinity of the eustachian orifice, a favorite site for this type, it infiltrates the folds and fills the fossae, baffling efforts at eradication and leading to deafness by obstruction of the tube. In the lateral angles of the pharynx, it forms great pale welts which may rival the tonsils in size and even merge with them by overriding the posterior pillars. In the tonsillar region, it brings jointly into prominence adjoining groups of follicles, some in front of the tonsil on the plica, others below its lower pole, giving the tonsil an appearance of having overflowed its bounds. In the tonsil itself, the hyperplasia, if not large, may be obscured by pillar and plica, and unless sinus suppuration be found, an infective tonsillitis may not be distinguishable from that of common retention. Even the suggestive presence of a semipurulent instead of cheesy substance in the crypts, and oversensitive congested or thickened pillars, are not wholly distinctive. Again, though more rarely, as in the second case herewith, the tonsil is the seat of a large and perniciously active hyperplasia which infiltrates and overlaps the usual bounds and which, though benign, has an aspect of semimalignancy. It is not to be inferred that ordinary enlargement of the tonsil is microbic in origin, being neither perniciously active in growth nor disposed to infiltrate or overrun its bounds. Nor does it originate late in life; whereas, the infective lymphoid growths, in both cases herewith, originated after the fifty-fourth year.

In the larynx while, as a rule, it produces only moderate thickening, in rare instances the small follicles on the rim of the larynx undergo an immense hyperplasia, developing into tumor-like growths which occupy the space of the laryngopharynx, being heretofore of unknown origin, and only vaguely described under the mistaken[1] term "lymphoma."

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* Read at the thirty-sixth annual congress of the American Laryngological Association, 1914.

It is this tumor-like formation in the laryngopharynx which we have found definitely in two cases, by cultural, microscopic and vaccine methods, to be of microbic origin, having found also the infiltrating type of hyperplasia at the eustachian orifice to partake of the same nature. A fair inference from these findings, considering clinical similarity, points to the hyperplasia at the other sites named as of like infective origin. Leukemia was excluded by the absence of any involvement of the lymphatic glands, and malignancy was negatived by the microscopic test which showed, in each instance, "a simple hyperplasia of lymphoid tissue similar to that of the tonsils."

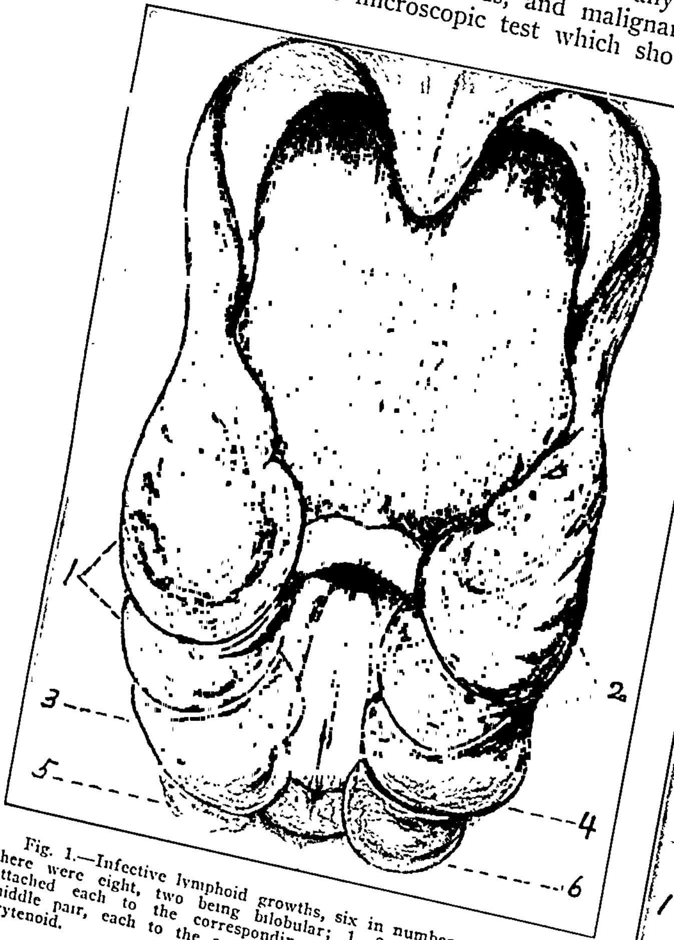

Fig. 1.—Infective lymphoid growths, six in number, appearing as if there were eight, two being bilobular; 1, 2, upper pair, bilobular, attached each to the corresponding pharyngo-epiglottic fold; 3, 4, middle pair, each to the aryepiglottic fold; 5, 6, lower pair, to the arytenoid.

Case 1.—In the laryngopharynx of the first patient there were six separate growths appearing at the surface as eight in number, arrayed four on each side (Fig. 1), the upper two of which were merged in one broad base attached astride the corresponding pharyngo-epiglottic fold, tapering thence upward to the lower pole of the tonsillar fossa. These are designated double upper growths 1 and 2, right and left, respectively, forming the upper pair composed each of two lobes. None of the attachments, however, nor indeed the lower growths, could be discerned until the removal of one or more above. Then the middle pair, appearing third from the top and designated 3 and 4, was found to be attached, each to the corresponding aryepiglottic fold, and the lower pair, 5, quite small, and 6, to the posterior plane of the corresponding arytenoid. These are among the sites specified by Heitler[2] as containing a few lymphoid follicles. Not being visible, the follicles are usually ignored, but evidently they are liable to infection, resulting in hyperplasia which, in minor degree, is not uncommon, and accounts for an aspect of chronic laryngitis and its accompanying "sinus cough," which, though obstinate before, is found, after the sinus disease is remedied, simply to have disappeared; and which, in major degree, though rare, accounts for the present large overgrowths.

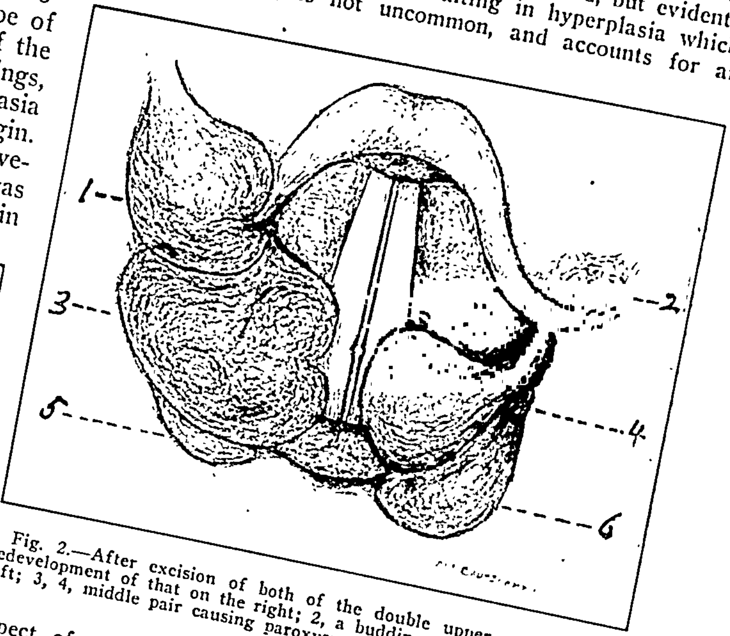

Fig. 2.—After excision of both of the double upper growths; 1, a redevelopment of that on the right; 2, a budding redevelopment on the left; 3, 4, middle pair causing paroxysmal dyspnea; 5, 6, lower pair.

Viewed alone, and considering the total absence of faucial tonsils, which I enucleated years ago, the double upper growths, 1 and 2, by reason of their pyriform contour, smoothly enveloped borders and rudimentary crypt-marked central area, suggested compensatory or aberrant tonsils, such as Rosenberg's[3] "tonsillæ succenturiata"; and the striking similarity in structure of the first specimen removed

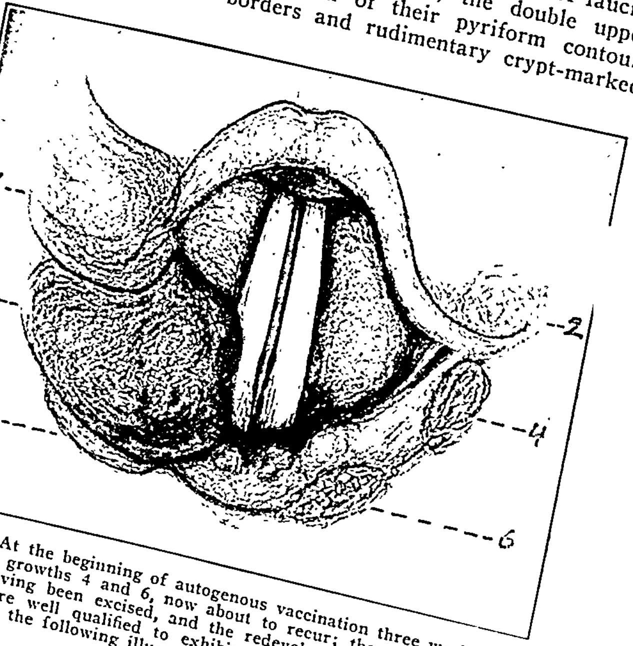

Fig. 3.—At the beginning of autogenous vaccination three weeks after excision of growths 4 and 6, now about to recur; the original growth, 3, never having been excised, and the redevelopment, 1, both growing actively, were well qualified to exhibit the efficacy of the vaccine as portrayed in the following illustrations.

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[1] Senn, Nicholas: Pathology and Surgical Treatment of Tumors, Philadelphia, W. B. Saunders, Ed. 2, 1900, pp. 20 et seq.

[2] Heitler: Med. Jahrbuch, Vienna, 374; cited by Bosworth, ii, 454.

[3] Rosenberg: Mundhöhle des Rachens und des Kehlkopfs, Ed. 2, p. 191.

caused the patient, who is himself a well-known physician, to remark that Nature seemed determined that he should have tonsils. But, viewed in their entirety, the theory of compensation became untenable by reason of the improbability that minute lymphoid follicles would, within a period of six months, so late in life as the fifty-fourth year develop without definite cause into overgrowths so unusual in multiplicity, situation and size. Besides, there seemed no end to their development as, three months later, 3, 4 and 6, having grown to impinge on the glottis, the already labored breathing became aggravated by paroxysms of dyspnea, spoken of as "choking spells."

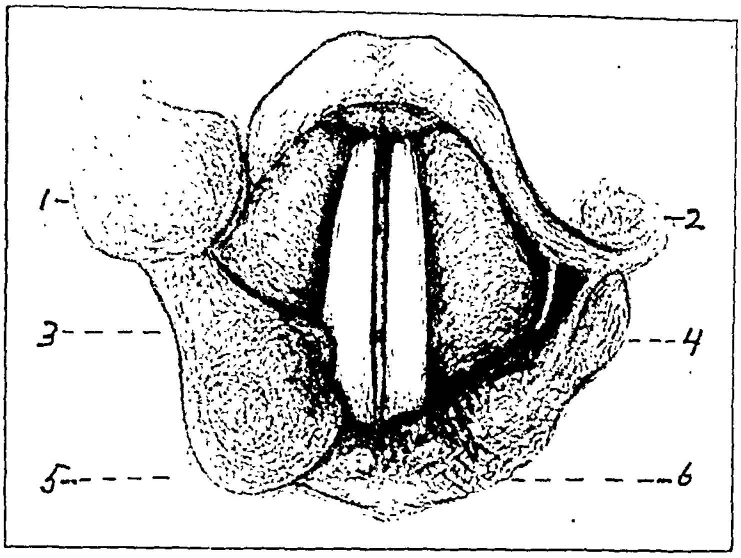

Fig. 4.—Two days after the first administration of vaccine; the original growth, 3, and the redevelopment, 1, already show reduction; the wrinkled surface near the budding redevelopments, 4 and 5, indicates an inner shrinkage so rapid that the mucosa could not keep pace.

The complete surgical removal, in November and December, 1913, by the process of snaring, with upward traction, of both of the upper double growths, amounting to two-thirds of the total volume of growths, abated the dyspnea but little, but did lay bare the mechanism of the paroxysmal attacks, in that the middle pair, 3 and 4, were found to sag toward the glottis, so that any inspiratory effort would draw them closer together across the opening of the larynx, like a pair of folding trap-doors (Fig. 2). The removal late in January, 1913, of one of this pair, 4, on the left, but not its partner, 3, on the right, though also taking 6 from the left, remedied temporarily the difficulty in breathing and afforded an interval during which treatment by Roentgen ray was applied externally to the neck. It had little or no effect, however, inasmuch as a redevelopment of double growth 1, which had already commenced, steadily progressed to the extent of one-third its former size (Fig. 3), a redevelopment of double growth, 2, became manifest, and original growth, 3, which had not been excised, grew even alone, to embarrass the breathing.

It was in face of this discouraging prospect that the report of the bacteriologic examination of the double growth, 2, was received from Dr. E. C. Rosenow, who reported "the presence in the tissue, in large numbers, in almost pure culture, of *Streptococcus haemolyticus;* the predominating presence of the same streptococcus in the associated spheno-ethmoidal sinus discharge; and the presence of the same microbe in the eustachian lymphoid hyperplasia."

Although foreshadowed by the coexistence of the recurrent eustachian hyperplasia, then just coming under our suspicion of being infective, the plain inference from the bacteriologic findings, that the laryngeal growths actually were microbic in origin, presented itself as a pathologic novelty. Aside from the unlike effects of tuberculosis and syphilis, the nearest analogy seemed to be chronic enlargement of true lymphatic glands by pyogenic organisms. Nor did the literature afford any confirmation, as in none of the few cases referred to as lymphoid tumor[4] and lymphoma,[5] or by the non-committal term "polypus," was any cause discovered.

As the need was great, however, a practical confirmation was sought and found by a trial of the autogenous vaccine. Though an initial dose of 50,000,000 was advised, 500,000,000 were taken. The effect was comparable only to that at which one marveled in the early days of diphtheria antitoxin. The change commenced within twelve hours, with relief from irritation, and was marked within two days by visible diminution of the redeveloped growth, 1, and original growth, 3, while the strangely wrinkled aspect of the left aryepiglottic fold (Fig. 4) marked a very rapid reduction of its swollen substance.

The further retrocession under semiweekly doses of 50,000,000 is best told by reference to Figures 5 and 6, showing at biweekly intervals an uninterrupted reduction, which proceeded further, to a practical disappearance of all the growths; and within the year since elapsed they have shown no disposition to return.

Lest an overimpression of the efficacy of the vaccine be conveyed, mention should not be omitted of the limitations found. The infective lymphoid hyperplasia at the eustachian orifice of the same patient, though containing the same micro-organism, but not in pure culture, did not yield to the same vaccine. The great pale welts in the pharyngeal angles yielded little or none, and have since grown still larger at their lower ends, instead of smaller, which refutes any idea of a belated Roentgen-ray effect, nearby, on the laryngeal growths. And the sinus discharge, which had never been more than moderate, and had previously been reduced by surgical drainage, though further diminished by the vaccine, never entirely ceased, and has now resumed its average state.

There were limitations also in the second case, in which, nevertheless, autogenous vaccination filled a similar need. In anticipation of a full report, a brief comparison of salient features will at present suffice.

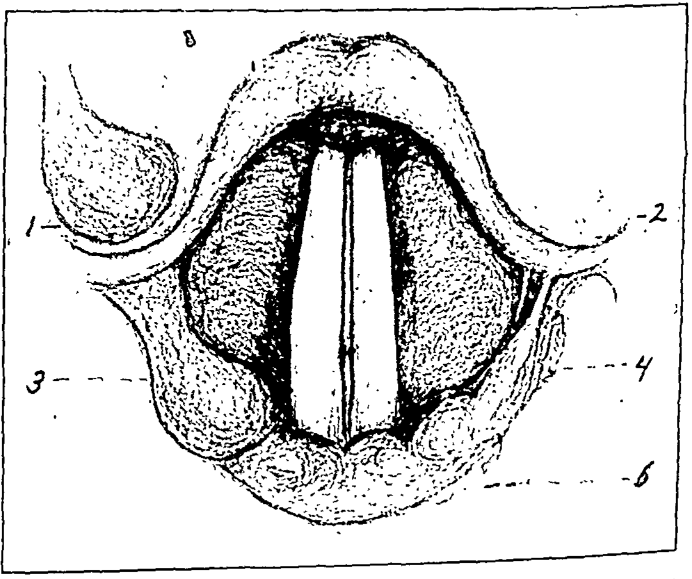

Fig. 5.—At the end of two weeks; conspicuous reduction of growth 3, of redevelopment, 1, and of budding redevelopments, 2, 4 and 6.

Case 2.—Strikingly similar was a lobulated tumor-like lymphoid growth almost equal in size, and corresponding in position, to double growth 1. It showed a like tendency to recurrence after excision, and in the tissue the same *Streptococcus haemolyticus* was found predominating.

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[4] Mackenzie, John N.: Sec. Laryng. and Otol., A. M. A., 1889; abstr., Jour. Laryng. and Rhinol., 1889, iii, 436.

[5] Browne, Lennox: The Throat and Nose, etc., London, Ed. 5, Plate vi, Fig. 48, p. 410; ibid., Plate vi, Fig. 50, p. 416.

The conditions, however, were dissimilar, in that the lingual tonsil was the site of a pair of tumor-like growths; that on the right, after excision, soon showed redevelopment. And the faucial tonsils presented an extreme degree of hyperplasia of the infiltrating type described above, the one on the right after excision also showing redevelopment. The hyperplasia, which had begun only after the sixtieth year, soon becoming obstructive, was still perniciously active, as shown by recurrences and continued growth when the vaccination was commenced. The dose was not so large, nor the effect so prompt, but all activity soon ceased, the budding redevelopments gradually subsided, and the unoperated growths slowly, although only in part, subsided, the half or so which remained assuming more the phase of ordinary hypertrophy. To emphasize our present point, the vaccine verified the infective nature of the hyperplasia by arresting its infective activity.

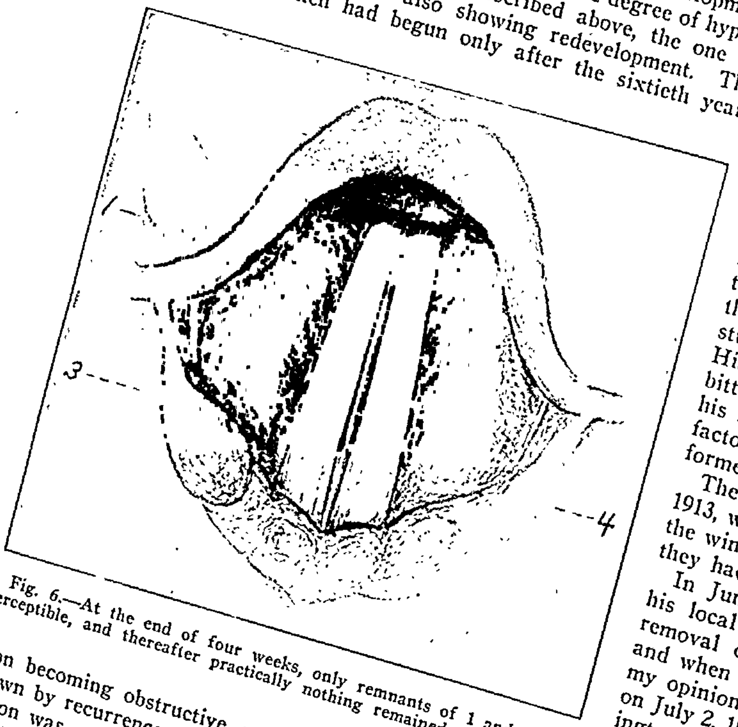


Fig. 6.—At the end of four weeks, only remnants of 1 and 3 were perceptible, and thereafter practically nothing remained.

In partial explanation of the limitations, the more detailed bacteriologic findings in the first case indicated that a mixed and varying microbic flora presented, at certain sites, difficulties to which the vaccine was not adapted.

To the laryngeal growths, however, it was adapted, and it verified convincingly their microbic origin. To watch these growths, from time to time, threaten the very portal of life, in double array, and then to see them "fold their tents, like the Arabs, and as silently steal away" was a revelation in vaccine therapy, open to no other interpretation.

15 East Washington Street.

Vaccination Against Typhoid in the Italian Army.—This vaccination is not compulsory in the Italian army, but over 7,000 were vaccinated in 1913. The antityphoid vaccine was mixed with antiparatyphoid vaccine and the morbidity after ne injection was 4.4 per thousand; after two, only 2.7, and fter three injections, 0.3 per thousand, while the non-vacnated developed typhoid or paratyphoid in 35.3 per thousand, with a mortality of 7.1 per thousand. During the latter part of the year the dosage was reduced and the morbidity varied in different districts from zero to 0.29 per thousand, with no mortality. The chief of the medical staff is now endeavoring to have the vaccination made compulsory throughout the army.

SCIATICA A SYMPTOM OF APPENDICITIS

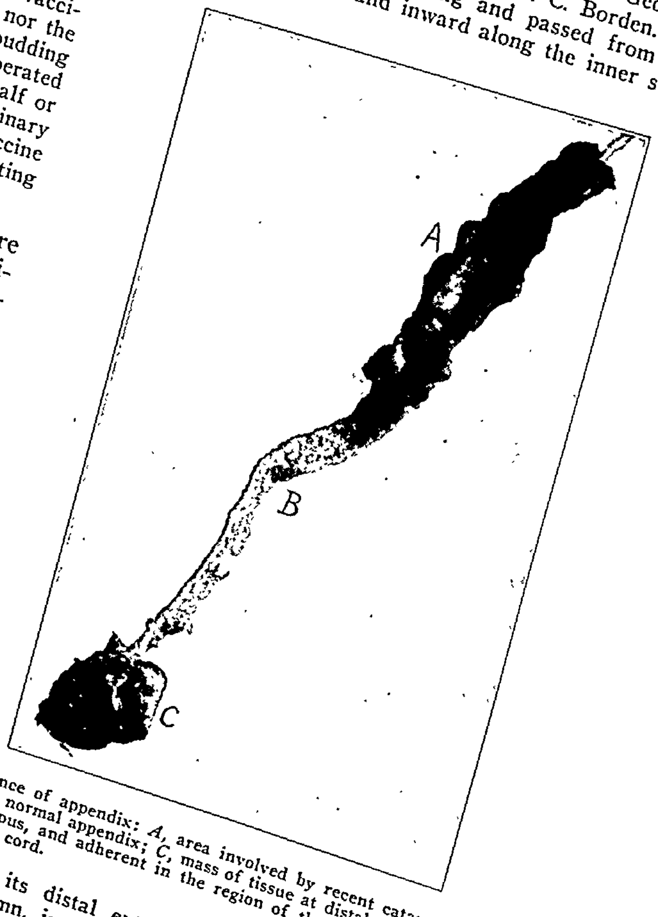
B. M. RANDOLPH, M.D.
WASHINGTON, D. C.

History.—Mr. B., farmer, aged 48, first consulted me in the summer of 1911. Up to the preceding spring he had enjoyed quite good health. At that time he was taken with an acute illness, which confined him to bed for more than a week, and which was accompanied by fever, and was regarded at the time as an attack of "sciatic rheumatism." Since then his health had been poor. He had lost weight, had dyspepsia, suffered from palpitation, and was unable to work as formerly. He was anxious about himself, and thought he might have heart disease or cancer. A careful study of his case failed to bring out a clear-cut diagnosis. His diet and hygiene were regulated, and he was given a bitter tonic. His condition improved greatly, he regained his normal weight, and was able to do his work quite satisfactorily, though he had to be more careful of himself than formerly.

The patient reported again in the summers of 1912 and 1913, when there were some minor matters to be adjusted. In the winter of 1913-1914 his health and vigor were better than they had been since his first illness.

In June, 1914, he had an acute abdominal attack, which his local physician diagnosed as appendicitis, and advised removal of the appendix. He delayed taking this advice, and when he was able to travel, came to Washington to get my opinion. I advised him to submit to the operation, and on July 2, 1914, appendectomy was done in the George Washington University Hospital by Dr. W. C. Borden.

The appendix was very long and passed from its cecal attachment backward and inward along the inner surface of the ilium, its distal extremity being situated against the spinal column, just to the inner, median side of the right common iliac artery, and in close proximity to the upper division of the lumbosacral cord. At the tip of the appendix was an adherent mass the size of a hazelnut. which was



Appearance of appendix: *A*, area involved by recent catarrhal inflammation; *B*, normal appendix; *C*, mass of tissue at distal end of appendix, containing pus, and adherent in the region of the upper division of the lumbosacral cord.

ruptured in removal, liberating pus. The odor of the pus pointed to a colon infection.

The wound was drained. The patient was very ill for a few days after the operation, but from then on made satisfactory progress, and was discharged cured, Aug. 12, 1914.

Pathology.—The specimen is a very long appendix. At its proximal portion for a distance of an inch and a half the mucosa is swollen and injected, and presents the ordinary appearance of a catarrhal appendicitis. From this area out to the distal extremity there is no sign of inflammation, either recent or ancient. Indeed, the mucosa is rather paler than normal, and the walls exceptionally thin, as if it had been stretched for a long time. The mass at the extremity of the appendix, when separated from the surrounding adhesions, has a smooth surface, and on section presents the appearance of organized fibrous tissue. On its surface is a whitish-gray area about 1 mm. in diameter. The wall of the pus cavity presents a ragged appearance. The cavity is continuous with the lumen of the appendix. Near the tip of the appendix the mucosa is thickened and indurated.

For the following report and the accompanying photograph I am indebted to Dr. J. B. Briggs, professor of bacteriology and pathology in George Washington University: "The lymph-gland-like structure at the distal end of the appendix, with its eroded interior continuous with the lumen of the appendix, had a strip excised from one side. This section extended from the periphery, or peritoneal border, well into the lumen within the solid mass, and included a small (⅓ mm.) opaque yellowish 'tubercle-like' lesion visible on the external surface.

"Microscopic sections, stained in hematoxylin and eosin, and in van Gieson, showed alike the following characteristics:

"The main mass is composed of smooth muscle, from its arrangement evidently the hypertrophied muscular coat of the appendiceal wall. The exterior, or peritoneal region, showed a fairly loose connective tissue structure, in which many small round cells were embedded, with no particular vascular dilatation and, strangely enough, nothing but a loose accumulation of round cells to account for the well-defined tubercle-like focus seen on the surface by the naked eye. Toward the interior of the mass the zone of tissue bordering on the lumen was composed of a loose etiolated tissue, necrotic at its innermost margin, and loosely infiltrated nearest the muscle with round cells; nearest the lumen with a very few disintegrating pus cells. No necrotic process invading the muscularis was visible. The remains of the mucosa, aside from the etiolated connective tissue, could not be located.

"*Comment.*—The enlargement at the tip of the appendix is evidently the remains of an intra-appendicular abscess of long standing, and the evidently hypertrophic muscular appendicular wall speaks for a long-continued condition of hypertrophic pressure within the appendicular lumen. The relief of this pressure (evidenced by the reestablishment of the lumen of the sac in continuity with the lumen of the appendix), having provided an issue for the pus and inflammatory exudates, has left behind remarkably little trace of the earlier acute infectious inflammatory processes."

SUMMARY

It seems to me certain that the initial attack of right-sided "sciatic rheumatism," which ushered in this man's illness, was in reality an attack of acute appendicitis, with peripheral pain in the sciatic nerve due to the proximity of the inflammatory focus to its fibers of origin. The case brings home to us that so-called *sciatica* is a symptom, not a disease, and most often the etiologic factor is to be found above the level of the sacrosciatic notch.

The microscopic findings in this case are exceedingly interesting, illustrating in a rare fashion the means by which Nature protects the body against the effects of bacterial invasion.

Twentieth and P Streets, N. W.

SOFT TUMOR OF THE URINARY BLADDER

E. G. Ballenger, M.D., and
O. F. Elder, M.D., Atlanta, Ga.

The injection of sterilized air or oxygen into the bladder makes it possible to demonstrate *soft tumors* of this viscus. While others have directed attention to this fact previously, we believe that the two illustrations shown herewith may not be without interest. In Figure 1 the bladder was filled with air and the roentgenogram taken. Figure 2 is a photograph of the tumor after its removal. The actual diagnosis was first made by cystoscopic examination; we thought of treating it by fulguration. The roentgenogram led us to believe that the size of the tumor indicated its extirpation.

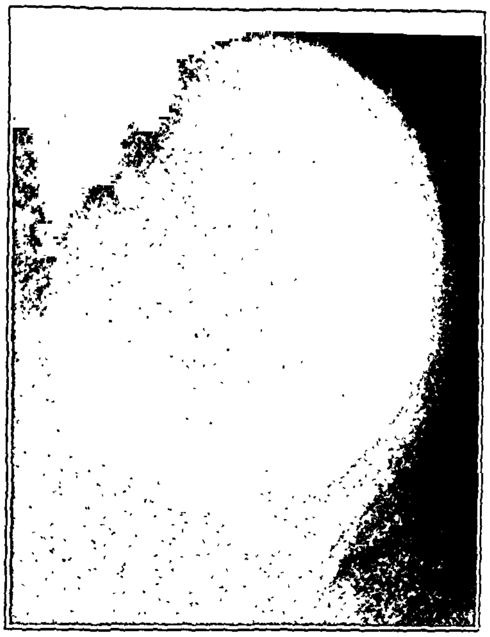


Fig. 1.—Papilloma of bladder. Roentgenogram (by Dr. J. S. Derr) after distending the bladder with air.

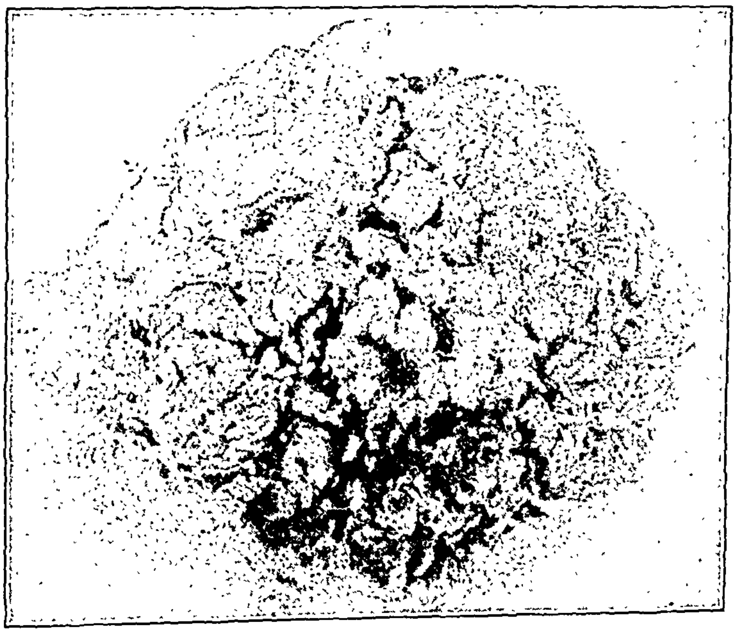


Fig. 2.—Tumor of bladder after its removal. Actual size 2¼ inches in diameter.

If the growth returns we shall employ the fulguration treatment before it has attained such a large size. The pathologist who examined the specimen reported that it was a benign papilloma.

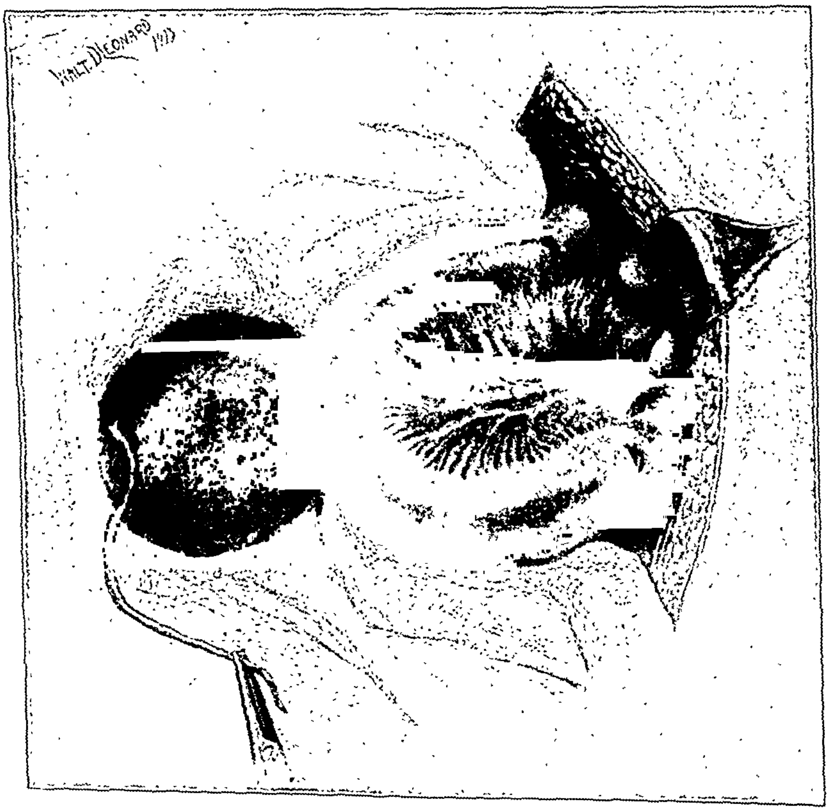
805 Healey Building.

Applications of the Study of History.—History maketh a young man to be old without either wrinkles or gray hair; privileging him with experience of age, without either the infirmities or inconveniences thereof. Yea, it not only maketh things past present, but enableth one to make a rational conjecture of things to come. For this world affordeth no new accidents, but in the same sense when we call it a new moon, which is the old one in another shape; and yet no other than it hath been formerly. Old actions return again furbished over with some new and different circumstances.—Fuller.

A CASE OF OBSTRUCTION OF MECKEL'S DIVERTICULUM

C. M. Watson, M.D., Pittsburgh
Surgeon to Presbyterian Hospital

Mr. W., merchant, admitted to the Presbyterian Hospital about noon, November 1, was referred by his physician with a diagnosis of recurrent appendicitis. The following history was obtained from the patient himself: Twenty years ago, when 18, he had an attack of severe cramp-like pain in the lower right quadrant of the abdomen, accompanied and followed by tenderness in this area. He did not vomit. Since then similar attacks have been recurring with increasing frequency. After the first attack he had no more trouble for nearly a year. He has had temperature elevation at times. The trouble has always been preceded by constipation and relieved by bowel movement. The pain and tenderness have always been in the same location, and have never been associated with vomiting. He thinks the latter attacks, although more frequent, have not been so severe as the early ones.



Meckel's diverticulum, with cord-like remains of the remainder of the omphalomesenteric duct.

The present trouble began the night of October 30, two days previous to admission, being in no way different from the previous attacks and no more severe. The bowels had moved several times. He had, when I first saw him, no temperature elevation, and his pulse was normal. His expression was one of comfort, which interrogation confirmed. He had been taking liquids and soft diet with no evidence of gastric disturbance. There was no distention but rather marked tenderness over the right lower rectus a little below and to the left of McBurney's point. My diagnosis was in harmony with that of those who had seen him before, with the possibility of enteroliths in the appendix to account for the pain and tenderness without temperature. There seemed no reason for immediate operation, more particularly as he had taken food but a short time before. The leukocyte count at this time was 13,500.

The following morning, his condition contrasted strongly with that of the previous day. He appeared very ill, and was vomiting frequently small quantities of fluid. Preparation for immediate operation was ordered, and before this could be made, the vomiting became fecal in character, and of considerable quantity.

After thorough lavage, ether was administered and a right rectus incision made. The presenting intestine was distended and deeply congested, while the abdomen contained much free fluid serous in character and slightly stained.

Toward the pelvis a tense band was felt, the weight of much of the distended small bowel resting on it. This was divided between clamps, releasing a loop of ileum fixed low in the abdomen, and which presented at its apex a saccular tumor of about the size of a small orange. This proved to be a Meckel's diverticulum fixed at its distal portion by the cord-like remains of the balance of the mesenteric duct. The sac communicated with the ileum at its anterior aspect near the mesentery.

Four factors entered into the mechanics of the obstruction which was an acute flexion: the weight of the tumor itself; its fixation by the remains of the fetal duct; the conversion of this into traction by the weight of the superimposed intestine, and the rotation about the axis of the bowel due to the point of attachment of the diverticulum.

The diverticulum was removed from the bowel between clamps, and the latter closed in a transverse direction with three rows of sutures. The prolonged traction on the intestine had drawn its walls into a sort of process at the point of attachment, which enabled us to make a strong closure without narrowing the lumen. A tube was placed in the pelvis.

But a small amount of ether was required. Operation was completed in forty-five minutes. The patient's condition for the first forty-eight hours following operation was entirely satisfactory, and in marked contrast to that just previous. There was no further vomiting, nausea or pain. The appearance of comfort and well-being had returned. On the third day, however, the pulse gradually became weaker and more rapid without a corresponding temperature elevation or return of pain or vomiting. Death occurred on the fourth day. No necropsy was obtained. The specimen was globular, about the size of a small orange with an opening communicating with the bowel about half an inch in diameter. Distally it was continuous with the obliterated remains of the balance of the duct. The diverticulum contained three foreign bodies—two dense enteroliths and a piece of wood ¾ inch in length. This man during the previous twenty years had been attended by a number of physicians and always with the diagnosis of appendicitis.

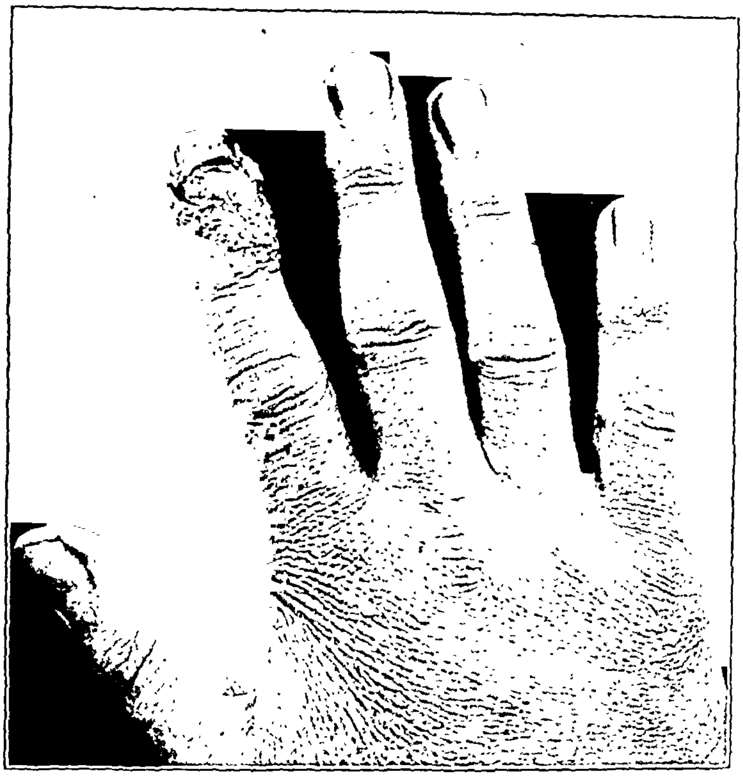
516 Federal Street.

The Practical Man and the Scientist.—Some one has defined the practical man as one who practices the errors of his forefathers. He is tied down to his preconceived opinions, not being enough of a dreamer to get away from them. He will be able to get through the world without receiving many hard knocks; but he will not inaugurate profound changes and advances in human life. That will always be left for the scientist who refuses to be satisfied with what is and who is always seeking a new sort of fact to destroy his own and his contemporaries' equilibrium.—R. D. Carmichael, *Science.*

CHANCRE OF THE FINGER

Andrew J. Gilmour, Ph.B., M.D., New York
Consulting Dermatologist, Manhattan State Hospital; Assistant Attending Dermatologist, New York City Children's Hospital and Schools

J. C., white man, aged 38, single, waiter, a native of Switzerland, Feb. 18, 1912, noticed a swelling just to the inner side of the nail of the right index-finger. This increased in size along the inner side of the terminal phalanx and became so painful that after ten days the patient found it necessary to stop work. March 13, 1912, he visited one of our hospitals and an incision was made. Ten days later a second incision was made and the wound was curetted, at which time the patient says he saw bone. No pus was obtained. Following the incision the swelling became smaller, and on June 7, 1912, it appeared as represented in the accompanying photograph. The condition of the nail is well shown.



Chancre of the Finger.

A photograph taken the same date as the chancre showed a marked papular rash that had been present three weeks.

I have previously seen two cases of chancre of the finger treated by incision before the diagnosis was made.

133 East Fifty-Seventh Street.

Raynaud's Disease in Stone-Cutters Using Pneumatic Tools.—D. E. F., aged 26, married, with good family and personal history, except that he was neurotic, found that frequently and only when cutting stone with a pneumatic tool, the index and middle fingers of his right hand would become white, cold and numb. This instrument, which oscillates from 900 to 1,600 times per minute, transmits strong vibrations to the hand of the operator. The patient told me of a fellow laborer who was similarly affected by using the same kind of tool. Other treatments having failed, I prescribed daily applications of decoction of capsicum. This was done by keeping the fingers for half an hour wrapped in gauze saturated with the decoction. The attacks ceased, apparently as the result of the treatment.—Charles H. Cargile, M.D., Bentonville, Ark.

The Indispensable Animal Factor.—To be a good animal is the first requisite to success in life, and to be a nation of good animals is the first condition to national prosperity.—Herbert Spencer.

New Instruments and Suggestions

A NEW METHOD OF SYRINGE TRANSFUSION

Lester J. Unger, M.D., M.A., New York

Those who have witnessed or performed syringe-cannula transfusions realize the difficulties associated with the procedure. It was to obviate these, and at the same time lose none of the valuable features of the method, that I set out to devise my instrument.

DIFFICULTIES OF THE SYRINGE-CANNULA METHOD

The chief difficulties are: 1. The cannulas are repeatedly handled because (*a*) the syringes are being constantly connected and disconnected, and (*b*) they are pulled on when blood is aspirated, and pushed on when blood or saline is injected. When one considers the amount of handling necessitated in the transfusion of a syringeful, or 20 c.c., of blood, the large number of times the cannulas are jarred is evident. It is in the fact that the cannulas are handled *frequently and directly* that we find the cause of their dislodgment from the vein.

2. The second great difficulty is the risk of clotting. This occurs if the cannulas are not regularly flushed with saline after the withdrawal or injection of blood, or if the procedure is carried out too slowly. Delay will also cause clotting in the syringe before it has been entirely emptied of blood.

3. Two men, equally expert, are necessary. The assistant must be as well acquainted with the method as the operator, since their functions are identical.

The instrument I have devised eliminates the *causes* of the difficulties experienced in the syringe-cannula method. Fundamentally, it is a stop-cock, which alternately connects a syringe for blood to the donor and at the same time a syringe with saline to the recipient; then by turning the cock the syringe with blood is immediately connected to the recipient and the syringe with saline to the donor.

THE INSTRUMENT

A cock which has four outlets constitutes the central part of the instrument. The outlets are designated as follows (Fig. 2): (1) blood outlet (*B*); (2) saline outlet (*S*); (3) recipient's outlet (*R*); (4) donor's outlet (*D*).

1. Blood outlet (*B*). To this, is directly attached a 20 c.c. "Reformed Record" syringe (*Syr*). Through this outlet, b means of the syringe, the blood is aspirated or injected.

2. Saline outlet (*S*). To this is attached a long piece o rubber tubing, the other end of which has connected to it syringe for saline. The exact length of the tube is immaterial. It should, however, be long enough to get the assistant who is attending to the injection of saline out of th way of the operator. The material of which the tube i made is likewise unimportant, since nothing but salin passes through it. Instead of a plain syringe, a slightl modified Wechselmann salvarsan apparatus may be used The latter, by means of two ball valves, allows of the ready filling and emptying of the syringe, and eliminates the necessity of disconnecting it.

3 and 4. Recipient's and donor's outlet (*R* and *D*). To each of these is connected a paraffined rubber tube, 1¾ inches long, which has attached to its other end a metal connecting piece. This, in turn, fits the recipient's and donor's cannula. The tubing is a piece of catheter (No. 15 French) which is paraffined according to the method described by Dr. G. E. Brewer. They are sterilized, and then for a few seconds immersed in boiling paraffin. The tube is then shaken in the air in order to distribute the paraffin equally, to get rid of the excess, and to hasten hardening.

The cock is so arranged that the central stopper (*C S*) can be rotated only through an arc of 45 degrees. This range of rotation allows of three possible positions, in two of which two simultaneous circuits exist; in the third no circuit whatever is present. Naming the positions according to the flow of blood and the circuits according to the outlets they connect. we have:

1. Donor's position (Fig. 2) establishing, (*a*) donor blood circuit, and (*b*) recipient saline circuit.
2. Recipient's position (Fig. 3) establishing (*a*) recipient blood circuit, and (*b*) donor saline circuit.
3. Intermediate position, establishing no circuit—all outlets are shut off.

1. Donor's position (Fig. 2). If the cock be turned toward the donor as far as it will go, the instrument will be in the donor's position. A channel (donor blood circuit) between the donor's vein and the Record syringe is established for the aspiration of blood. At the same time, another channel (recipient saline circuit) exists, through which saline is injected into the recipient's cannula in order to insure its patency.

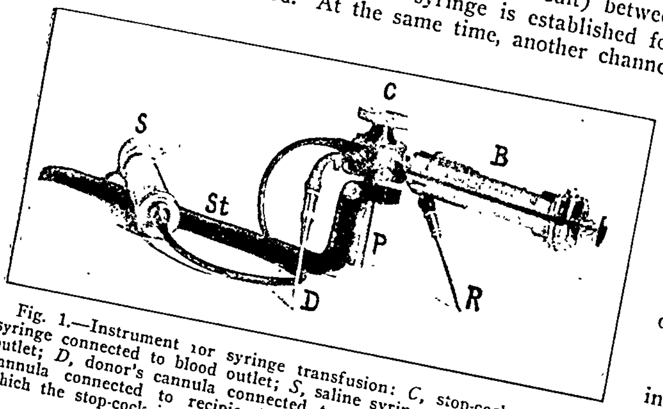


Fig. 1.—Instrument for syringe transfusion: *C*, stop-cock; *B*, blood syringe connected to blood outlet; *S*, saline syringe connected to saline outlet; *D*, donor's cannula connected to donor's outlet; *R*, recipient's cannula connected to recipient's outlet; *St*, stand; *P*, pedestal by which the stop-cock is raised or rotated.

2. Recipient's position (Fig. 3). If the cock be turned toward the recipient as far as it will go, the instrument will be in the recipient's position. Here again, two channels exist, one through which the blood is injected into the recipient (recipient blood circuit), and one (donor saline circuit) which connects the donor with the saline syringe so that this circuit can be kept patent.

It is this *immediate and continued* flushing with saline of that part of the system through which blood is not passing that insures freedom from clotting.

3. Intermediate position. If the cock be turned midway between the donor's and recipient's positions, the instrument is in the intermediate position, and all the outlets are closed off.

The instrument is supported by a stand, which is merely a mechanical device to hold the cock stationary and to permit of its adjustment to various heights in conformity with the levels of the veins.

TECHNIC

After having firmly fixed the stand to the table, the cock, with the tubing attached to the donor's and recipient's outlets, is fastened to the stand. The saline apparatus, from which all air has been forced out, is connected to the saline outlet. The cock is put in the donor's position (Fig. 2), and here also the air is forced out by means of saline. By raising, lowering, or rotating the pedestal, to which the instrument is attached, and by proper placing of the arms, connections to the cannulas can be made without difficulty.

Into the recipient's vein is inserted a large cannula, which is then connected to the recipient's outlet. Since the cock is in the donor's position, saline can be slowly injected into the recipient, thereby insuring the patency of this cannula. Into the donor's vein is inserted a cannula which is now attached to the donor's outlet. It is important to insert the cannula so that it points toward the donor's hand rather than the tourniquet. Blood immediately runs out of the blood outlet, forcing the air ahead of it. Into this outlet, a Record syringe is placed and blood aspirated. When the syringe is filled, the cock is turned into the recipient position (Fig. 3), and the blood injected. Since the assistant is always very slowly injecting saline, he is now flushing the circuit which was used in getting the blood into the syringe. As soon as the 20 c.c. of blood have been injected, the cock is turned back to the donor's position, and the syringe refilled. This is continued until the desired amount of blood has been transfused. The syringe need not be changed after each injection, but may be refilled until it begins to work with difficulty. Before the syringe is disconnected, the cock should be turned to the intermediate position so that there is no loss of blood.

After connections have been made to the cannulas: 1. The operator (*a*) aspirates and injects blood, (*b*) changes the syringe when necessary and (*c*) turns the cock back and forth. 2. The assistant merely slowly forces saline out of his syringe. 3. The nurse cleans the Record syringes as fast as they are used, and places a clean one in easy reach of the operator.

EXPERIMENTAL WORK

I have repeatedly transfused dogs and have found the instrument to work admirably. The first tests were simply artery-to-vein transfusions of about 300 c.c. of blood. In the second group of experiments much larger amounts were transfused. In order to obtain a greater quantity of blood, so that the amount would at least equal that of the usual human transfusion, the following procedure was carried out: After a primary artery-to-vein transfusion, which was arbitrarily set at about 300 c.c., a secondary one, in which the original recipient was made the donor, was immediately performed. In this way, the original recipient was able to furnish not only part of his own blood, but also that received. By this method, as much as 700 c.c. were transfused at one time. By adding a tertiary transfusion, a total amount of 1,460 c.c. was passed through the instrument in an experiment. Finally, vein-to-vein transfusions were done. Here also primary transfusions were resorted to in order to increase the amount of blood obtainable. In all the experiments, I was limited only by the amount of blood the dogs could furnish. At the end of each experiment, the circuits were tested with saline and found to be patent.

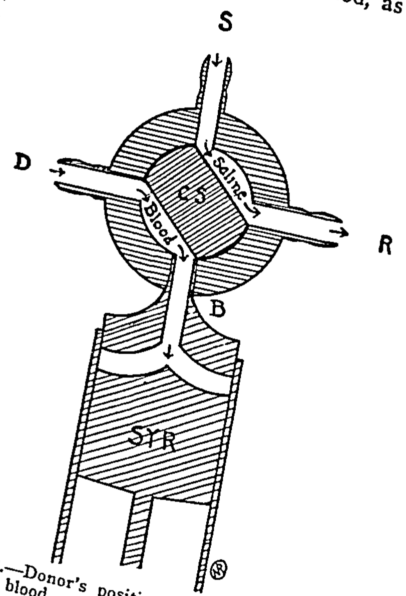


Fig. 2.—Donor's position: *D*, donor's outlet; *B*, blood outlet; *Syr.*, blood syringe. Blood passes from donor's vein through *D*, out at *B* into *Syr.* *S*, saline outlet; *R*, recipient's outlet. Saline is forced from saline syringe through *S*, out at *R*, into recipient's vein. Channel between *D* and *B*, donor blood circuit; that between *S* and *R*, recipient saline circuit. *CS*, central stopper (rotates through an arc of 45 degrees).

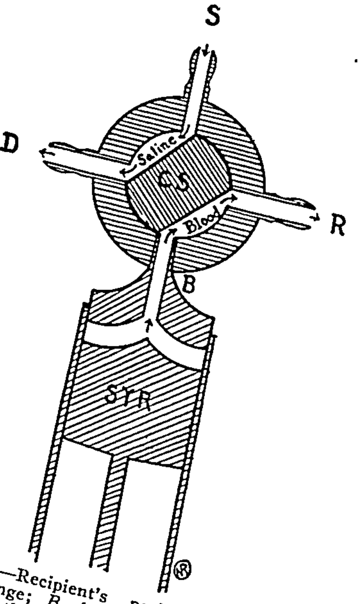


Fig. 3.—Recipient's position: *Syr.*, blood syringe; *B*, blood outlet; *R*, recipient's outlet. Blood is forced out of *Syr.* through *B*, out at *R*, into recipient's vein. *S*, saline outlet; *D*, donor's outlet. Saline is forced from saline syringe through *S* out at *D* into donor's vein. Channel between *B* and *R*, recipient blood circuit; that between *S* and *D*, donor saline circuit. *CS*, central stopper.

This method will be applied to man as soon as opportunities present themselves.

ADVANTAGES OF THIS METHOD

The instrument I have described overcomes the difficulties experienced with the syringe-cannula method, by striking at their causes.

1. The frequent handling of the cannulas is eliminated because connections are made not directly to them but to the cock. For this reason the cannulas ought not to be dislodged.
2. Clotting is avoided because the entire system is regularly and instantly flushed with saline, and the length of time the blood is outside of the body is reduced to a minimum. In none of the animal experiments did clotting occur.
3. Only the operator handles the blood syringe. The function of the assistant is limited to the injection of saline.
4. Fewer syringes are needed. In one experiment, 800 c.c. of blood were transfused, only two syringes being used. It is advisable, however, to have about four to meet emergencies.
5. It is time-saving because it reduces the manipulations; it minimizes the time the blood is outside of the body, and it allows of the injection of saline simultaneously with the aspiration or injection of blood. When indicated, a more rapid transfusion can be done by this than by any other method. The rate of the flow can, however, be varied at will. Blood can be sent across as slowly as one wishes, because the patency of the circuits can be relied on.

I wish to express my thanks to Dr. F. S. Mandlebaum, who so generously afforded me the privileges of the pathology laboratory of the hospital, and to Drs. Shapiro, Rosenthal and E. Mayer, who were of great assistance in the animal experimentation.

Mount Sinai Hospital.

A DEVICE FOR HOLDING SOLUTION BOTTLES IN OPERATING ROOMS*

Donald C. Balfour, M.D., Rochester, Minn.

Each bottle shown in the accompanying photographs has as its feature a combination handle and corking device which can easily be detached from the bottle and sterilized. The chief advantage, therefore, is that the handle being sterile, the surgeon or assistant may readily obtain more iodin before or during an operation without the soiling of gloves. To those using the benzin, iodin and alcohol method of skin preparation, for which the apparatus is especially adapted, other points of advantage are quite obvious, for instance, evaporation is prevented (the handle being equipped with a spring), solutions are not wasted, bottles are not broken, and time and trouble are saved the operating room personnel.

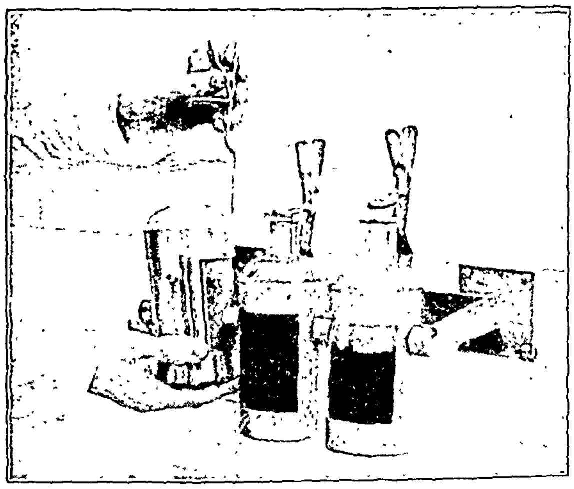


Fig. 1.—Method of attaching stoppers.

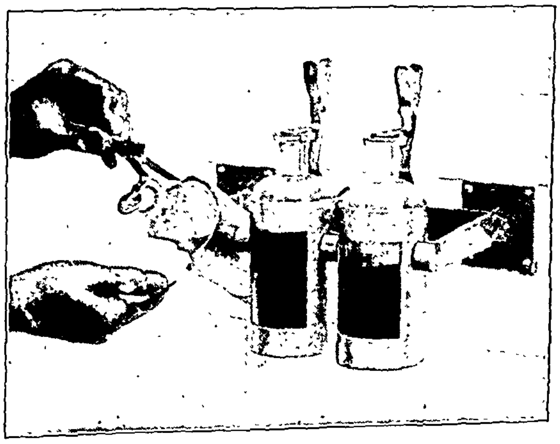


Fig. 2.—Stoppers in place and bottles in use.

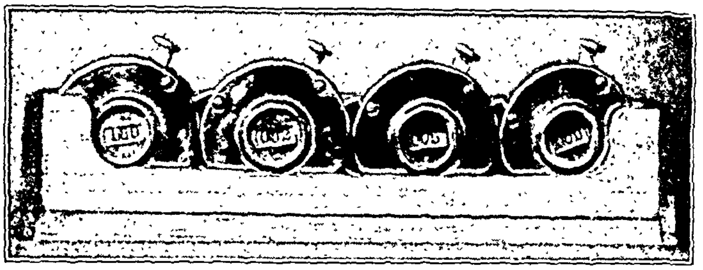
LABORATORY SUGGESTIONS

Clyde L. Cummer, M.D., and Richard Dexter, M.D.,
Cleveland

EQUIPMENT FOR SEROLOGIC WORK

In performing serologic work, certain technical methods may be evolved which will be economical of both time and labor. Each worker will naturally adapt his equipment to his own needs. We have made certain adaptations which may prove useful to others.

Removing Cotton Stoppers from Pipets.—The plugging of pipet mouth-pieces with cotton is desirable in order to avoid drawing fluid into the mouth and to prevent saliva from running into the pipet. The removal of these cotton plugs is often bothersome, especially when many pipets are used and have to be cleaned.



Apparatus for recording differential counts.

Our laboratory assistant solved the question by suggesting the use of a dentist's broach. With this fiendish instrument most of us are painfully familiar. It is merely a bit of highly tempered fine wire, roughened so that it grips whatever it touches, and is mounted in a metal handle. With it, the bits of cotton can be removed from fifty pipets in a few minutes.

Apparatus for the Inactivation of Serum.—The inactivation of specimens of blood-serum by use of heat at 56 C. (132.8 F.) is performed much more satisfactorily in a water-bath than in a dry oven. The maintenance, however, of an unprotected water-bath at 56 C. for as short a time as half an hour is not easy, even when the equipment includes a thermoregulator. We have found that the following adaptation saved much annoyance:

A so-called small "physician's incubator" (Bausch and Lomb Company) was secured which is built in the form of a cylinder, with the opening at the top. It is provided with a water-jacket of an ample capacity. A round basin 3 inches high and of circumference to fit in the incubator, was made and provided with handles to facilitate lifting it in and out. A number of small cans were secured and holes were punched in the bottoms and sides so that the water would circulate freely when they were lifted.

The large basin is brought to proper temperature outside the incubator, the small cans containing the specimen-tubes being lifted up and down to allow the water to mix freely. When the temperature is uniform throughout the bath and at the proper point, the bath is placed inside the incubator. This is prepared in advance by filling the water-jacket with hot water, between 60 and 70 C. (140 and 158 F.). We find that if the inner bath is at the correct temperature, the exact temperature of the water in the surrounding incubator does not matter greatly as long as it is hot enough to act as an insulator and prevent heat loss. The temperature of the surrounding jacket may be kept between 55 and 65 C. (131 and 149 F.) during the day with a simple Bunsen flame.

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* From the Mayo Clinic.

With this apparatus, from forty to forty-five specimens may be inactivated at one time, if need be. Our experience has been that the temperature in the central enclosed bath remains constant for from thirty to sixty minutes without any attention whatever, and so proves somewhat of a labor-saving device. The cost of the apparatus is inconsiderable.

APPARATUS FOR RECORDING DIFFERENTIAL COUNTS

For use in making differential blood counts we have improvised a contrivance of a small wooden box made to hold upright four counting machines, on which may be recorded the number of the most prevalent types of leukocytes. The forms occurring in smaller proportions can be remembered without being recorded. With this scheme, it is not necessary to use the eyes for recording, and the total of each class is in plain view at any time.

LABORATORY BURNER

A tin can with diameter less than 3 inches is used. In the bottom three or four circular holes are made for air intakes. A microburner is placed inside the can and the rubber tubing is carried out through one of the openings. Slides to be stained may be placed across the top and the stain may be allowed to simmer. The can serves both as a support for the slide and as a shield against air-currents in case the burner is used in front of an open window.

Rose Building.

A PROCEDURE MINIMIZING THE DIFFICULTIES OF TRANSPLANTATIONS OF A GONOCOCCUS CULTURE

A. P. Ohlmacher, M.D., Detroit

One who handles gonococcus cultures is familiar with the uncertain viability of the organism. To safeguard a culture, the ordinary practice is to grow it on ascites-agar and to transplant at intervals of twenty-four to forty-eight hours. Outside of large laboratories, with a corps of special assistants, this becomes burdensome and expensive.

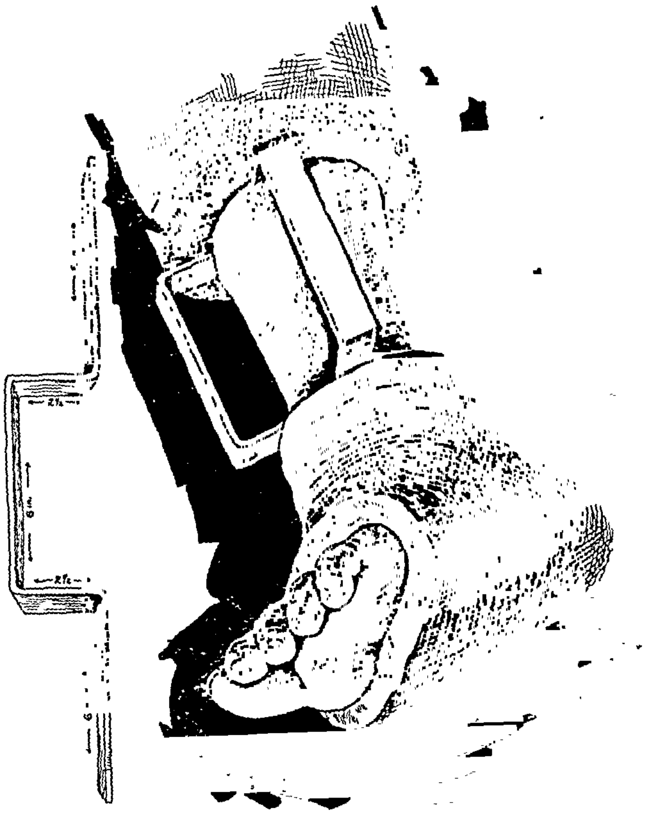
About nine years ago, while inoculating a horse to produce antigonococcic serum, and while handling numerous gonococcus cultures, I hit on a method of reducing the frequency of subcultures. By its use I found it possible to increase the interval between transplantations from seven to fourteen days, or even longer, using a solid culture medium as a substratum. The details are as follows:

Löffler's blood serum mixture of the usual formula, with bouillon neutralized according to the prevailing standard, constitutes the culture medium. It has happened in my work that horse's serum (the vehicle generally employed in commercial biologic laboratories) formed the basis, though the blood serum of cattle probably would answer equally well. It is preferable to have the test-tube slant of Löffler's medium with its original condensation water. If perchance this condensation water is lost, it may be replaced by the requisite amount of ordinary bouillon (standard neutralization). The transplantation, after one or more subcultures on ascites-agar, is effected by the platinum loop, sowing directly into the pool of condensation water, or bouillon replacing the condensation water; but not, as by the usual custom, of rubbing the inseminated loop over the surface of the slant. With its condensation water thus impregnated, the tube of Löffler's medium is capped to prevent evaporation, and without undue agitation set in the incubator. After a period generally not more than forty-eight hours, it will be found that a transparent, glistening, colorless line of culture appears above the condensation water, and by a process resembling the "creeping of salts" in strong saline solutions, it will be seen that this line of culture slowly but steadily ascends the surface of the slant, continuing for seven, ten, fourteen or even more days. From this mounting line of culture, further transplantations may be effected at a convenient interval, the length of which may be ascertained for a given gonococcus strain after a few experiments.

INTERRUPTED CAST FOR COMPOUND FRACTURES

F. P. Corrigan, M.D., Cleveland
Associate Surgeon, St. Alexis Hospital

An infected compound fracture presents to us a problem difficult in its nature. The presence of pus demands, above all, frequent dressings after complete drainage has been established. If the dressings are not changed frequently, the wound remains bathed in pus. The phagocytic cells of the freshly-exuding lymph are constantly battling against odds and their energies wasted. The value of frequent dressings can not be over-emphasized; in fact, our aim should be the maintenance, if possible, of a pus-free wound. On the other hand, firm union of the fragments demands well-secured, correct apposition. This would seem to interdict frequent changes of dressings with the movements involved. This objection is real if the ordinary splints applicable to simple fractures are used. No matter how carefully handled, each loosening and readjustment of splints endangers the apposition. A further objection is that each change of dressings necessitates the presence of the surgeon at the bedside.



Author's interrupted cast for compound fractures, with detail of hoop-iron brace.

Coincident with the increased speed in transportation and modern machinery has come a rapid increase in the number of this class of cases. The problem of maintaining absolute cleanliness and correct apposition must be solved. Malunion or no union, bone necrosis, even sacrificed limbs, are the dire results of unsuccessful treatment.

In my own work I have found the device here presented indispensable in handling cases of this class. The illustration is for the common fracture of the lower leg but the idea can be modified for other situations. It consists simply of a plaster cast built in two sections. The two sections are joined into a rigid unit by three metals bent in the shape illustrated and embedded equidistant from each other in the sections of plaster. These metals may be strips of brass, iron or steel (I have used all three). By using three strips, sufficient rigidity is obtained if they are ⅛ inch thick and ¾ inch wide. This permits the use of ordinary hoop-iron or strap-iron, which is obtainable anywhere.

The dimensions given are tentative only, but are correct for a medium-sized man; they will be altered as the judgment of the attending surgeon dictates.

The advantage secured is ready accessibility without disturbance of apposition.

The dressings can be changed by the nurse as often as desired.

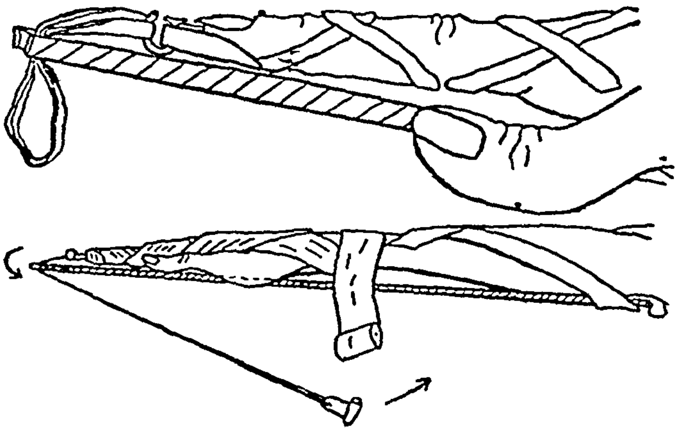
The presence of the doctor to readjust splints is not necessary.

St. Alexis Hospital.

CONVENIENT SPLINT FOR FRACTURE OF METACARPALS

Charles Auer, M.D., New York

In fracture of the hand distal to the carpals, it not infrequently happens that deformity tends to recur, especially in a fat or swollen hand, in spite of the rubber tubing and splints ordinarily used to retain the fragments, unless the latter are pressed so tightly as to cause severe pain or even necrosis in the already injured tissues. In old fractures and ununited fractures in which the injury has been overlooked and there is great deformity and callus formation, strong and continuous traction is obviously indicated to bring the parts into a line as nearly anatomic as the fibrous union will permit, and of holding it there immovably.



Convenient splint for fracture of metacarpals.

I have found the splint as illustrated satisfactory in a series of cases, including one so-called Bennett's fracture of the thumb, one compound fracture in a man weighing over 300 pounds, and several old ununited fractures with deformity.

This dressing exerts traction of any degree desired (being adjustable by changing the location of the safety-pin or by using two rubber bands instead of one) for almost any period of time without becoming disarranged or requiring much attention. It may also be applied to more than one finger.

The upper diagram shows the spiral arrangement of the adhesive bands to the finger and to a bent wire nail. Two bands of adhesive applied the same way should be used instead of the one as illustrated to give proper strength. A relaxed rubber band is shown slipped over the bent nail and lying in a nick at the end of the splint.

In the lower diagram the hand and finger have been bandaged up to the wrist and the wooden splint, which is broad at the arm and hand and narrow at the finger, applied and held by one broad band of adhesive placed as illustrated. The bandage then should be continued *including* the splint, and the adhesive tag carrying the free end of the rubber band pinned to the outside of the completed bandage as indicated by the arrow.

2009 Madison Avenue.

Special Article

PRACTICAL PHARMACOLOGY*

(*Continued from page 512*)

VI

B. DEPRESSANTS: 4. OF THE CENTRAL NERVOUS SYSTEM—MORPHIN GROUP— (*Continued*)

THERAPEUTIC USES

The celebrated remark attributed to Sydenham, that few physicians would be so callous as to practice medicine without opium, suggests the variety of conditions in which the opiates are used.

Morphin stands first among drugs for the relief of pain. It often gives relief when used in doses which have hardly any other perceptible effect, but intense pain may require the use of the largest doses. Neuralgia affords one of the few examples of conditions in which other drugs are to be preferred to morphin as analgesics.

There are comparatively few conditions in which morphin is indicated as a simple hypnotic, since we now have a series of drugs better adapted for this purpose, but sleep may be afforded by relieving pain which prevented it.

Morphin is useful to prevent cough when this is not attended with free expectoration and is of sufficient frequency to prove distressing, or when it interferes with sleep. When bronchial secretion is free the cough is necessary to remove it, and interference with the cough at this time results in the accumulation of fluid in the air passages, making the patient's ultimate condition worse.

Morphin and opium are used as diaphoretics, especially in the form of Dover's powder, in which the dilatation of the skin vessels by morphin promotes the diaphoretic action of the ipecac. Morphin allays restlessness, and this is very commonly utilized in the treatment of inaccessible hemorrhage.

Opium acts locally to diminish intestinal peristalsis, and this action is utilized in a variety of conditions, many of which do not require enumeration. Opium in peritonitis serves the double purpose of relieving pain and restlessness and of immobilizing the intestine. It is useful in checking the excessive peristalsis in diarrhea.

Morphin is frequently used previous to general anesthesia to allay the nervous apprehension of the patient and to secure sleep. It also acts synergetically to chloroform and ether, less of which is required for general anesthesia after morphin than without it. The synergistic action of chloroform and morphin on the respiratory center appears to be a source of danger in their combined use. The depression of the respiratory center prevents, to a certain extent, excessive respiration accompanying variations in the depth of anesthesia. Accidental death from too rapid administration of ether is not common, with dogs, at least, after morphin; in fact, it is sometimes impossible to kill dogs by the ordinary administration of ether when they have previously received large doses of morphin.

Codein is now largely prepared synthetically from morphin, and is obtained in a purer form than it was formerly. Codein and ethyl morphin hydrochlorid are much less active than morphin, which they resemble otherwise. Codein is said to be only about one-tenth to one-twentieth as active as morphin, and while this may be true so far as the narcotic action is concerned, it is not used therapeutically in doses twenty times as large as those of morphin.

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* This is the sixth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

Its analgesic action is so slight as to make it much less valuable than morphin, but it does dull pain to some extent, and the probable absence of euphoria, which leads to the habit with morphin, is a distinct advantage of codein. It is said to have an especial value for the relief of abdominal and pelvic pain.

The actions of ethyl morphin hydrochlorid on the central nervous system are very similar to those of codein, and in addition it is irritant to the mucous membrane of the conjunctiva, this action being utilized in the treatment of conjunctivitis, iritis and corneal opacity, but it sometimes causes acute edema of the conjunctiva from local vasodilatation.

Ethyl morphin hydrochlorid has been exploited to some extent as an analgesic and sedative but there is no satisfactory evidence that it is equal to morphin for these purposes.

Diacetyl-morphin (heroin) differs from morphin to a greater degree than codein and dionin. Diacetyl-morphin and its action in lessening cough have been known for many years, but it was not used therapeutically until Dreser investigated it in 1898, and stated that it decreased the reflex excitability of the respiratory center toward painful stimuli, such as those which induce cough, more than it does toward carbon dioxid, the normal stimulant of the center. He also stated that it slows the rate of respiration while the depth and force of the individual respirations are increased, and he suggested that the increased force of the respirations would be of value in the treatment of bronchitis, in which the air-passages are narrowed.

Dreser experimented with rabbits, but it has been shown that his results do not apply to the use of heroin on man, and Cushny has shown recently that heroin influences the respiration exactly as morphin does; it has, therefore, no evident advantage over the older drug in the treatment of cough.

Diacetyl-morphin is much more toxic than morphin and must be used in correspondingly smaller doses. It gives rise to the habit quite as readily as morphin does, and the habit is as difficult to break and fully as injurious.

Diacetyl-morphin is said to be less actively narcotic in proportion to its activity on the respiratory center, and it is also less actively analgesic than morphin; its use should be limited, therefore, to the relief of cough, if, indeed, it were not better to use morphin or codein in these cases also.

Indian cannabis is usually classified with the morphin group, but its action is feeble compared to that of opium, and its effects are so uncertain that it is probable that there is no condition in which opium or morphin does not deserve the preference.

It is sometimes asserted that the Indian hemp of the Orient is more active than that grown in America, but a specimen grown near Philadelphia was found to be nearly twice as active as a fairly good specimen of the imported. Indian cannabis is often called hashish, but the hashish of Persia is a mixture, of which hemp is a constituent.

It is commonly stated that the resin represents the active constituents of Indian hemp, but the intensity of the physiologic action on dogs and the content of resin do not run parallel.

Cannabinol, prepared from hemp, produces hallucinations, lassitude and a desire to sleep.

Extract of Indian cannabis is a constituent of the extensively advertised proprietary hypnotic Bromidia, and it is probable that the continued belief in the value of Indian cannabis as a hypnotic is due in no small measure to its exploitation in this preparation.

It is sometimes used as a hypnotic, but it is impossible to give any nearer indication for its special field of usefulness.

DOSAGE

Morphin sulphate is analgesic in doses of from 3 to 15 mg. ($\frac{1}{20}$ to $\frac{1}{4}$ grain), the smaller doses lessening or abolishing mild pain, (such as may interfere with sleep) and intense pain requiring the larger dose. Even this may require repetition before relief is afforded, but it is preferable to use an insufficient dose and repeat it in half an hour, rather than run the danger of giving too large a dose at once.

The dose used for the relief of cough varies widely, dependent on whether it is desired to lessen the frequency of a troublesome cough without interfering with its removal of the secretion, or to abolish a severe irritative "dry" cough, which interferes with sleep. The former will require from 1 to 2 mg. ($\frac{1}{60}$ to $\frac{1}{30}$ grain) and the latter will require somewhat larger doses and more frequent repetition. Eight mg. ($\frac{1}{8}$ grain) of morphin or 0.06 gm. (1 grain) of opium in the form of Dover's powder is used for its diaphoretic effect. A single dose taken on retiring is a popular treatment for "colds." When morphin is used just prior to general anesthesia, the dose is from 8 to 16 mg. ($\frac{1}{8}$ to $\frac{1}{4}$ grain), and when used some hours previously to secure sleep and allay apprehension, the larger dose will be required usually, or the smaller dose may be used and repeated when the effect begins to pass off.

The aim with all narcotic drugs should be to secure the desired action with the absolute minimum of the drug, and it is always best to give a small dose when there is any doubt concerning the amount which will be required and repeat it if necessary.

Codein and its salts are given in doses of 0.03 gm. ($\frac{1}{2}$ grain) or more, this dose corresponding to approximately 0.003 gm. ($\frac{1}{20}$ grain) of morphin. Its use can be long continued without much fear of giving rise to the habit.

Half the dose may be used and repeated with correspondingly greater frequency when desired.

The average dose of diacetyl-morphin, or heroin hydrochlorid, is 3 mg. ($\frac{1}{20}$ grain). Its use should not be long continued because of its extreme tendency to induce the habit.

The average dose of extract of cannabis indica is stated to be 0.01 gm. ($\frac{1}{6}$ grain) and of the tincture 0.5 c.c. (8 minims), but there is no obvious indication for their use.

MATERIA MEDICA[*]

Morphin, an alkaloid obtained from opium, is the chief therapeutic constituent of the drug.

In medical literature the term "morphin" is habitually used indiscriminately for the alkaloid and its salts, but the prescriber should not write "morphin" when the sulphate, or other salt, is desired. Morphin and its salts occur in commerce as colorless or white crystals or as a crystalline powder, odorless, and having a bitter taste. The dose of the several products is comparable and from a practical point of view the only important difference to note is their solubility in water and in alcohol.

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[*] Owing to lack of space the materia medica of morphin, opium and cannabis indica has been largely omitted. It will be included when this series is published in book form.

MORPHIN AND SCOPOLAMIN

Some years ago Schneiderlin, a surgeon connected with an institution for the insane, administered morphin and scopolamin to a patient in the institution for the purpose of diminishing the amount of general anesthetic necessary for a major surgical operation, and was surprised to find that he was able to remove a cancerous breast without administering chloroform or ether to induce general anesthesia.

After performing a small number of operations in which morphin and scopolamin were employed in this way, he suggested the use of the combination as a substitute for general anesthetics, or to render more than a few drops of the latter unnecessary for surgical operations.

Schneiderlin seems to have been under a misapprehension concerning the degree to which morphin and scopolamin are antagonistic, and to have supposed that they were synergistic only in their narcotic effects, for he placed much stress on the importance of the antagonisms in their side actions. In truth, the antagonisms between morphin and scopolamin are of minor importance, but they have an extraordinary degree of synergistic action on the respiratory center, sometimes causing paralysis in minute doses of the combination.

The morphin-scopolamin narcosis was tried by many surgeons, but the fatalities following its use were so numerous that it was abandoned by the great majority of operators, but it has been exploited in a sensational manner both in Europe and in the United States as a preliminary to childbirth. Effective doses are not very dangerous to the mother, in the hands of those who have mastered the difficult technic of its use, but labor is frequently prolonged by its use and the death-rate among the new-born from asphyxia is certainly higher than with other methods in the hands of the general practitioner.

Under no circumstances should the single dose exceed 0.01 gm. (1/6 grain) of morphin and 0.5 mg. (1/125 grain) scopolamin, nor should this be repeated until the effects have passed (several hours). The combination is strongly contra-indicated outside of special institutions, and except in the hands of those who are trained in its use.

Morphin and scopolamin do not produce total insensibility to pain when used in doses which are safe, but they induce a peculiar condition — the so-called "twilight sleep" — in which everything is quickly forgotten, so that the mother has no recollection of anything that happened during labor.

An American manufacturer combines an extract of cactus, known as cactoid, with scopolamin (or hyoscin), claiming that the danger to the heart is overcome thereby; but it has been shown by several investigators that cactus and all its preparations are inert; hence such combination can have no advantage over the simpler one. Another manufacturer has sought to avoid the decomposition of scopolamin, to which the injurious action is attributed, by the addition of an alcohol, but this is of no practical advantage.

Various combinations of opium alkaloids under trade names, including Omnopon, Pantopium and Narcophin, have been introduced with the claim that they have all the advantages of morphin without the side actions, but independent observers have not found the expensive substitutes preferable to morphin.

(To be continued)

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 513)

XIX

Diphtheria

This disease was long thought to be due to filth, because, like all sore throats, etc., it seemed to be more prevalent in dirty, damp, and crowded places. This is true only because it is not so readily eradicated from such surroundings, more cases are not discovered, and more carriers are found in such localities. Many sore throats were termed diphtheritic when they were septic, or cases of tonsillitis with membrane, or were really scarlatinal cases. Also, membranous croup was long held to be distinct from diphtheria. With the discovery of the contagium of diphtheria, the Klebs-Loeffler bacillus, it is now conceded not only that the discovery of this germ in the secretions of the throat, nose, or other parts of the body proves that diphtheria is present, but also that its absence is proof that the disease is not present, provided that the swab is properly taken and the culture made by an expert. Also, it has now long been proved that membranous croup is laryngeal diphtheria.

This throat inflammation, now termed diphtheria, has been known for centuries, having first appeared in the East and later in Europe, occurring mostly in epidemics. Now it is endemic in most civilized cities, although small epidemics, localized in certain buildings, public institutions, tenements, or schoolhouses, frequently occur. A carrier of this disease may communicate it to persons so widely separated as to make the occurrence of the disease almost unexplainable by any epidemic theory. While nearly all mankind is susceptible to small-pox, and a large majority to scarlet fever, many persons seem naturally immune to diphtheria. Also, a closer contact is apparently needed with an infected individual than in these other diseases.

As one attack of diphtheria does not cause immunity from the disease for any great length of time, and as preventive measures do not protect for any great length of time, it is difficult to eradicate this disease. Small-pox could doubtless be prevented entirely in any country in which every individual was vaccinated at least two or three times during his life. Such prevention of diphtheria cannot be expected; but a more rigid quarantine of diphtheria patients, and a greater effort made to discover carriers and isolate and treat them will render diphtheria less and less frequent.

This disease has always had a large percentage of deaths; but the death rate since the introduction of antitoxin has been constantly on the decrease, and with a better understanding of the proper dosage of antitoxin, and with the effort made to diagnose the disease early, the death rate will be more rapidly decreased. Our best sanitarians believe that for every case of diphtheria recognized, at least one sore throat that carries the Klebs-Loeffler bacillus escapes; in other words, there is an equal number of missed mild cases.

It has been shown that patients with diphtheria when coughing, or even talking, will throw diphtheria bacilli into the air, and if such are deposited on culture plates not far from the patient, diphtheria bacilli will grow. It has also been shown that the Klebs-Loeffler bacillus lives longer where it is cold and damp than where it is dry and hot. The disease is more prevalent in cold weather, and the germ does not die so readily and become non-infectious in cold, damp rooms. Besides every care to prevent the spread of infection from the patient, the bedroom should be kept warmer in cold weather than with most diseases, not only because of the foregoing fact, but also because the toxins of diphtheria bacilli are depressing, and the patient's temperature is often too low.

It has been shown that the normal hydrochloric acid in the stomach inhibits or kills the diphtheria bacilli; therefore it is exceedingly rare to find these germs in the intestines, and very rare to find diphtheritic membrane in the stomach.

In the majority of cases the tonsils, one or both, are the parts affected in diphtheria, and with the present methods of treatment, in a large portion of these cases the membrane will be limited to these regions. The soft palate is next most frequently attacked, the pharynx next, and nasal diphtheria, with proper care taken, is not very frequent. Laryngeal diphtheria is not a frequent complication to tonsillar diphtheria; it generally begins as the original point of attack.

CARRIERS

These may be convalescents from diphtheria, or may be those who have had contact with diphtheritic patients who may or may not later develop the disease, or the term may be perhaps more properly limited to those who carry the germ for months. Diphtheria germs may live a long time on books or other substances, handled, coughed, sneezed or expectorated on by a diphtheria patient, and may infect persons coming in close contact with such infected material. This method of infection may not be very frequent. Animals may carry the infection. It is doubtless a good axiom to believe that a tonsillitis with exudate is diphtheria until it is proved not to contain the Klebs-Loeffler bacillus. Such a patient should be more or less rigidly isolated, as streptococcic infection is, if anything, more readily communicated than is a diphtheria infection. Therefore, there can be no excuse for not isolating a sore throat with exudate or membrane as soon as such a case is discovered.

The subject of carriers and the length of time which the Klebs-Loeffler bacillus may remain in the throat may be studied by reference to the article of Henry Albert[1] and that of Henry Page.[2] Both of these papers give many references and quote many authorities. Albert quotes Ledingham as stating that 50 per cent. of persons affected with diphtheria have lost the bacilli by the time the local membrane has disappeared. The average length of time that the bacilli will persist in a throat is thirty days, as shown by a very careful clinical and bacteriologic study of a diphtheria epidemic by Jessie W. Fisher.[3] She found that these germs could persist for more than 100 days, and in one instance 111 days. Not every bacillus carrier shows virulent germs, but in a large proportion of such bacilli carriers the germs are virulent; therefore a bacillus carrier should always be considered able to infect others. Even if such bacilli are proved not to be fatal to guinea-pigs, they might be able to infect a human being. Dr. Fisher also discovered that a sewer could become contaminated with diphtheria bacilli, that rats living or eating refuse in this sewer could become infected, and that cats catching or eating the rats could become carriers. Cats associating with a diphtheritic patient may frequently become carriers.

Klein[4] thought that cows could become infected and could cause infection of milk, which, unboiled, could infect an individual. Infected milk certainly can cause streptococcic throats, and it would seem likely could cause diphtheria. Probably a pet dog could carry the disease as readily as a cat. Therefore the rule and regulation of every physician should be that cats and dogs should be excluded from the sickroom of a patient with any kind of sore throat; and if other cases occur in a family in which quarantine is properly carried out, not only should the throats of all persons be examined, but also the cat or dog should be suspected.

The location of the Klebs-Loeffler bacillus in carriers who are convalescing is probably most frequently in the throat, though the bacillus may be found in the nose. In those who carry these germs long they are more likely to be found in the nose. Therefore, swabs should be taken of both regions. It is quite probable that a surface swab from a tonsil may be negative while a culture obtained from probing into crypts of the tonsils or in the region back of the tonsil might show the presence of the germ. It is culpable neglect to fail to examine a patient thoroughly to ascertain if he is free from the Klebs-Loeffler bacillus.

The boards of health vary as to the number of negative cultures that will release a patient from quarantine. The safest number is perhaps four negative cultures, two from the throat and tonsils, one from crypts or back of the tonsil, and one from the nose, taken on alternate days, at a considerable interval from the use of any antiseptic washes, gargles or sprays. This would seem to prove that a patient was free from the Klebs-Loeffler bacillus. In instances in which epidemics of diphtheria have occurred and cultures have been taken from the throats of a large number of well persons in the same institution, it has almost invariably been shown that a certain small percentage of such persons have acquired the germ and are carrying it without becoming actively infected.

TREATMENT OF CARRIERS

Various methods of ridding a carrier of the diphtheria germ have been tried. Local measures vary, and may comprise painting the suspected regions with tincture of iodin or with Lugol's solution, with silver solutions, phenol solutions, or the use of various gargles, hydrogen peroxid solutions, etc., and the nasal inhalation of various thymol or iodin inhalants or sprays. There is no question that whatever else is done, some local antiseptic should be applied. Diphtheria antitoxin injection has not been very successful. Local applications in the mouth, throat or nose of antidiphtheritic serum have not been proved to be very successful. Vaccinations with dead diphtheria bacilli have been only partially successful. These various methods are described by Albert.[1] He believes that a local application to suspicious crypts of the tonsils of a "5 per cent. solution of silver nitrate will destroy all bacteria with which it comes in contact." A thorough application of a 10 per cent. solution of silver nitrate he finds will cause some destruction of the epithelium of a crypt and a fibroblastic proliferation with ultimate obliteration of the lumen, which is of course the object desired.

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[1] Albert, Henry: The Treatment of Diphtheria Carriers, The Journal A. M. A., Sept. 27, 1913, p. 1027.

[2] Page, Henry: Diphtheria Bacillus Carriers, Arch. Int. Med., January, 1911, p. 16.

[3] Fisher, Jessie W.: A Diphtheria Epidemic, The Journal A. M. A., Feb. 6, 1909, p. 439.

[4] Klein: Local Gov. Board Rep., London, 1899, xxix.

The most successful treatment of diphtheria carriers seems to be that of spraying the nose and throat with pure cultures of *Staphylococcus pyogenes aureus*. According to the reports, this spray is apparently harmless to the individual. This method was first used by Schiøtz, in 1909. Although it is not always efficient, in some instances it has removed the Klebs-Loeffler bacillus and prevented its growth so that cultures were negative to it in a week or less. It has not proved very successful in nasal cases. Discussions of this treatment are given by Catlin, Scott and Day,[5] Lorenz and Ravenel,[6] and Rolleston.[7] On the other hand, Womer,[8] after using this staphylococcus spray in forty-two cases of diphtheria carriers, comes to the conclusion that although it is harmless, it does not appreciably lessen the period of quarantine. This leaves the value of this treatment still subject to positive proof. It may certainly be tried.

Womer states that "apparently most of the carriers do not spread the disease after sixty days from the day the disease begins." The word "most" leaves this assertion doubtful as far as general practice is concerned. Any one person who carries the disease may be one that could infect others.

Wood[9] thinks that in one or two instances, in diphtheria, spraying the affected areas with live lactic acid bacilli hastened the disappearance of the diphtheritic germ. Antiseptics should not immediately be used in the throat after such spraying, as he thinks it is the live bacilli that act perniciously on the diphtheria bacillus. This suggestion is worthy of further investigation.

Miller[10] recommends that diphtheria carriers have their throats sprayed with warm formaldehyd solutions every three or four hours during the daytime. The strength which he recommends to begin with is 0.25 or 0.5 per cent. in water of a 40 per cent. formaldehyd solution. [The official Liquor Formaldehydi is a 37 per cent. solution.] This solution may be increased in strength to 1 per cent. if deemed advisable. He found that in from three to six days the diphtheria bacilli disappear from the throats of carriers thus treated. He urges that the solution be prepared fresh each day. He did not find that the kidneys were irritated by such treatment.

IMMUNITY

While it has been long known that infants and many adults seem not to be susceptible to diphtheria, it has only lately been shown that probably a large proportion of adults, stated at 90 per cent., perhaps 50 per cent. of children, and perhaps 80 per cent. of newborn infants have diphtheria antitoxin in their blood and are not likely to become ill with diphtheria. It should be noted, however, that individuals protected against self-infection may be carriers of diphtheria bacilli which can infect others. How many of these immune adults or older children have been always immune, and how many have acquired immunity by contact with diphtheria germs, is not known. Nurses and physicians who frequently care for diphtheria patients have been shown to have antitoxin in their blood, though they may never have had the disease.

A skin test has been devised, known as the Schick reaction, to determine whether or not an individual is protected against diphtheria, that is, whether he has diphtheria antitoxin in his blood. The reaction seems very positive, and distinctly shows whether an individual is artificially protected or has natural antitoxin against this disease. The test is made with a dilute diphtheria toxin of such strength that 0.1 c.c. contains one-fiftieth of the minimum fatal dose for a guinea-pig. This amount, namely, 0.1 c.c., is injected into the layers of the skin, perhaps best on the inner surface of the arm. A positive reaction should appear in from twenty-four to forty-eight hours, and is evidenced by a slight swelling and localized redness, a reddened papule which remains from seven to ten days. When this papule disappears, the skin over it may desquamate slightly, and pigmentation may remain for days and even weeks. Park states that the injection is best given with a small hypodermic syringe with a platinum point needle, that the injection must be into the skin and not subcutaneously, and that immediately after the injection there should be a raised whitish spot, which in twenty-four hours becomes bluish, with a slight edema. Schick's interpretation of the positive reaction, as just described, is that the patient has no antitoxin in his blood, or at least less than 1/30 unit of antitoxin in 1 c.c. of blood. He declares that all persons so reacting are susceptible to diphtheria, and Park agrees with him. Park,[11] in his summary on immunity in diphtheria, states that according to Hahn the interval between the injection of vaccine and the development of antitoxin is not less than three weeks, while other investigators think that it may be eight days. Persons who have a natural antitoxin show an earlier increased antitoxin production. Von Behring considers that 0.01 unit of antitoxin per 1 c.c. of blood is sufficient to protect a healthy individual, and much less may protect against diphtheria.

Park states that last year in the Willard Parker Hospital one-fourth of the inmates were diphtheria carriers, and he found that "active immunization produced a very decided increase of antitoxin in a relatively short time in all persons who had natural antitoxin." Park found that 400 out of 700 scarlet fever patients showed natural immunity by the Schick reaction; that is, 57 per cent. were immune. He comes to the conclusion that persons positively exposed to diphtheria should be passively immunized even if the toxin-antitoxin injections have been given; but he urges that the Schick test will prevent the necessity of immunizing about two-thirds of such exposed persons. In other words, a person suspected of being exposed to diphtheria should receive the Schick test. If this is positive, showing that he is susceptible, he may be passively immunized with antitoxin. If he has not been immediately, but is likely to be, exposed and

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5. Catlin, S. R.: Scott, L. O., and Day, D. W.: Successful Use of the Staphylococcus Spray on Diphtheria Carriers, The Journal A. M. A., Oct. 28, 1911, p. 1452.
6. Lorenz, W. F., and Ravenel, M. P.: The Treatment of Diphtheria Carriers by Overriding with Staphylococcus Aureus, The Journal A. M. A., Aug. 31, 1912, p. 690.
7. Rolleston: Brit. Jour. Child. Dis., July, 1913.
8. Womer, W. A.: Results of Staphylococcus Spray Treatment in Forty-Two Cases of Diphtheria Carriers, The Journal A. M. A., Dec. 27, 1913, p. 2293.
9. Wood, Harold B.: Lactic-Acid Bacillus Spray for Diphtheria, The Journal A. M. A., Aug. 9, 1913, p. 392.
10. Miller: Med. Rec., New York, July 25, 1914.
11. Park, W. H.; Zingher, A., and Serota, M. H.: Active Immunization in Diphtheria and Treatment by Toxin-Antitoxin, The Journal A. M. A., Sept. 5, 1914, p. 859.

should be protected, he may be actively immunized with a vaccine. Such active immunization Park believes will last only from one to two years; hence general protection of large numbers of individuals against this disease cannot yet be urged. Park quotes Bauer as finding that the persistence of the bacilli in carriers is not shortened by active immunization.

The toxin-antitoxin injections used by Park are described in his article. The von Behring vaccine[12] "consists of a mixture of strong diphtheria toxin and antitoxin in such proportions that the toxin is just neutralized or is in very slight excess when tested on a guinea-pig." These injections are given intracutaneously, and immunity occurs in about ten days. Individuals with natural antitoxin in the blood may be more susceptible to reaction from this toxin-antitoxin vaccine than those without such antitoxin, and individuals who have antitoxin in their blood from previous infection may show a hypersensitiveness to the injection.

As just stated, patients so actively immunized are apparently protected for at least one year, while a patient who receives an immunizing dose of antitoxin is protected for perhaps not more than ten days. However, this antitoxin immunization is rapid and will generally protect a patient from one exposure to this germ.

Veeder[12] carefully reviews the literature on the subject of this vaccination, and finds that there is a marked variability of reaction to such injections, and quotes Kissling as believing that the injection should be made into the back instead of the arm, and that more dilute injections should be given, and if a milder one causes considerable reaction, a stronger one should not be used. If the milder one causes no reaction, a strong injection may be given. A "negative phase" has not been discovered; a patient who has been vaccinated with toxin-antitoxin, on subsequent exposure to diphtheria may receive antitoxin without showing hypersensitiveness. It has been shown that diphtheria carriers have more antitoxin in their blood than is found in the blood of patients who have just recovered from an attack of the disease.[13]

Von Behring[14] believed that the dose of toxin-antitoxin injected can be gaged accurately according to the weight of the individual. This he has worked out on animals.

The future advantage of this kind of protection against diphtheria lies in the fact that a foreign serum like horse serum need not be used in a patient who is a hay fever or asthma subject. It is quite probable that it would be unwise, at least at the present time, to use this toxin-antitoxin in diseased or damaged individuals, as those with a weak or diseased heart. At least, this precaution is suggested. It may later be shown that a dose so small as to give practically no reaction may still be sufficient to immunize. It is reported by Schreiber[15] that in vaccination by von Behring's method of 700 schoolchildren and 300 children in a hospital, there have been no untoward effects.

Immunizing doses of antitoxin to persons who have been exposed to diphtheria, given early, are generally successful in preventing the development of the disease. The immunizing dose for a child should probably be at least 1,000 units. Doubtless adults should receive larger doses. In the epidemic reported by Dr. Fisher, of the large number of immunizing doses given, but one person, a nurse, subsequently developed an attack of diphtheria during the period of observation. She had a mild attack at the end of two weeks. Dr. Fisher believes that two weeks is the limit of protection from a dose of immunizing antitoxin.

In the epidemic which occurred at Johns Hopkins Hospital, in 1911, Dr. Ford[15] reports that of 300 prophylactic doses of antitoxin administered, in most cases the reaction was limited to a slight urticaria. In a few instances there was some local edema, tenderness, and elevation of temperature. In five cases there were characteristic symptoms of serum disease, and in one of these cases there was typical anaphylactic shock. The patient who developed shock had previously received antitoxin, and had a history of asthma. It would have been interesting to note if all the other individuals who received the antitoxin had never been subject to asthma or hay fever: whether this shocked individual was the only one who had a history of asthma.

(*To be continued*)

New and Nonofficial Remedies

The following additional article has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Its acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

ALCRESTA IPECAC TABLETS.—Tablets containing an adsorption product of ipecac alkaloids with hydrated aluminum silicate (fullers' earth), each tablet representing 10 grains of ipecac.

Actions and Uses.—Alcresta ipecac tablets are said to be unaffected by the acid contents of the stomach, but to be decomposed by the alkaline fluids of the intestines with liberation of the ipecac alkaloids and thus to exert the amebacidal action of ipecac in the body.

Dosage.—Two to three tablets three times a day, one hour before meals, for a period of four to six days. Prolonged use of these tablets may cause diarrhea.

Manufactured by Eli Lilly & Co., Indianapolis, Ind. U. S. patents Nos. 1,048,711 (Dec. 31, 1912; expires 1929) and 1,048,712 (Dec. 31, 1912; expires 1929). No U. S. trademark.

The adsorption product of ipecac alkaloids which is contained in alcresta ipecac tablets is insoluble in water, alcohol and alcoholic or aqueous acidulated liquids. The compound is decomposed by alkaline fluids with liberation of the free alkaloids.

The basic product, alcresta ipecac, is assayed by the method which follows, and an amount of it used so that each alcresta ipecac tablet shall represent 10 grains of ipecac of standard alkaloidal strength:

Two Gm. of alcresta ipecac are placed in a 250 Cc. flask, 25 Cc. of ether added, the mixture well shaken and 5 Cc. of stronger ammonia water added. The mixture is shaken vigorously for several minutes and the ether then decanted through a filter into a 200 Cc. beaker. The contents of the flask are extracted in the same way with four more 25 Cc. portions of ether, decanting each portion through the filter. The filter is washed with a small amount of ether and the combined ethereal solutions evaporated to dryness on a water bath. The residue is dried for two hours at about 70 C. The alkaloids are dissolved in 20 Cc. of neutral alcohol, and 5 Cc. of tenth-normal sulphuric acid and 50 Cc. of distilled water added. The liquid is then titrated with fiftieth-normal potassium hydroxide using cochineal as indicator. Each cubic centimeter of tenth-normal sulphuric acid consumed represents 0.02384 Gm. of ipecac alkaloids.

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[12] Veeder, B. S.: Active Immunization Against Diphtheria by Means of von Behring's Vaccine, and the Diphtheria Toxin Skin Reactions, Am. Jour. Dis. Child., August, 1914, p. 154.

[13] Otto: Deutsch. med. Wchnschr., March 12, 1914, p. 542.

[14] Zangemeister and von Behring, Deutsch. med. Wchnschr., May 22, 1913.

[15] Schreiber: Therap. d. Gegenw., 1914, lv, No. 3.

[15] Johns Hopkins Hosp. Bull., October, 1911, p. 357.

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SATURDAY, FEBRUARY 13, 1915

LIVER FUNCTION AS INFLUENCED BY DUCTLESS GLANDS

Much has been written of late in regard to the interrelations of the ductless glands. Most of the suggestions advanced are purely hypothetic and serve merely to permit the formulation of definite questions in regard to the possible part played by the internal secretions. The thyroid, pancreas and suprarenal bodies, for example, have been alleged to influence each other in a complex manner, so that either failure or overactivity on the part of any one member of this group might affect the organism by the attendant alteration in the functions of the remaining allied ductless glands. The situation has been further complicated by the assumption that the action exerted by these individual glandular organs may be in the nature both of inhibition and of stimulation.

However vague these ideas may seem, and however much they are unfounded in the actual facts of experience, they embody a new point of view. We are asked to consider whether the deficiency of a specific internal secretion may not affect the organism by an indirect effect which its failure induces in other glandular functions as well as by the direct result of the suppression of its own immediate activities. To cite an illustrative possibility, if it were demonstrated that the thyroid exerts an inhibitory effect on the pancreas or a stimulating influence on the adrenals, then the failure of thyroid function might manifest itself not only in the direct consequences of hypothyroidism, but also in an unrestrained overactivity of the pancreas in the one case or a diminished efficiency of the unstimulated adrenals in the other.

There is a dearth of reliable facts regarding these suggested glandular interrelations. The questions involved are rendered extremely complicated and difficult to solve in the face of so many simultaneously occurring variables. Recent researches from the Hunterian Laboratory of Experimental Pathology at the Johns Hopkins Medical School[1] throw some light in this field. Whipple and his collaborators have shown that valuable information concerning liver function and liver disease can be obtained by the intravenous injection of a solution of phenoltetrachlorphthalein. The drug is excreted through the bile by the activity of the hepatic epithelium and may be extracted from the feces and estimated with considerable accuracy.[2] Under various conditions in which the functional capacity of the liver cells is interfered with, the output of phenoltetrachlorphthalein falls below normal, depending on the extent of the derangement. For example, in passive congestion of the liver there will be periods of decreased output corresponding to the intensity of the stasis or breaks in cardiac activity. When the portal blood is shunted around the liver by an Eck fistula, a distinct depression in the phenoltetrachlorphthalein output is noted as soon as liver atrophy and fatty degeneration set in. With an acute fatal poisoning and a definite liver injury produced by such toxic agents as chloroform and phosphorus, the output in the bile will usually be proportional to the amount of hepatic damage produced and may be completely suppressed.

Inasmuch as it is thus found that definite and known functional derangement of the liver is associated with a definite change in the excretion of phenoltetrachlorphthalein, it seems permissible to assume in turn that a decrease in the phenoltetrachlorphthalein output means a decrease in the functional capacity of the liver. From this point of view the Johns Hopkins pathologists have studied the liver function in the pathologic states brought about by removal of various ductless glands. After complete extirpation of the pancreas there is a steady fall in phenoltetrachlorphthalein excretion which speaks strongly for the idea that pancreatic activity is essential to proper liver function. The same is the case with the adrenals. These facts have a bearing on the theories of diabetes.

Thyroid insufficiency is without apparent effect on the functions here considered. Parathyroid insufficiency with tetany causes no decrease in phenoltetrachlorphthalein output and may even increase the readiness with which it is excreted. The tetany may cause hyperactivity on the part of the liver cells. Hypophysis extirpation produces varying results. Reverting to our opening remarks, therefore, these interesting new experimental studies supply evidence to the effect that the liver is very much concerned in the derangement that follows the removal of the ductless glands. Hence it is not at all improbable, in the opinion of Whipple and Christman, that this disturbance may be an important factor in the general symptom complex of ductless gland insufficiency.

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[1] Whipple, G. H., and Christman, P. W.: Liver Function as Influenced by the Ductless Glands, Jour. Exper. Med., 1914, xx, 297.

[2] Whipple, G. H.; Mason, V. R., and Peightal, T. C.: Bull. Johns Hopkins Hosp., 1913, xxiv, 207. Whipple, G. H.; Peightal, T. C., and Clark, A. H.: Ibid., 1913, xxiv, 343.

ENDAMEBAS AND PUS POCKETS ABOUT THE TEETH

The recent articles of Barrett,[1] Smith,[2] Bass and Johns,[3] Evans,[4] Middleton and others on the presence of endamebas in pus pockets about the roots of teeth, the relationship of these to other lesions and the use of emetin in treatment, emphasize again the need of cooperation between physician and dentist and better knowledge by each of the field of the other. The dentist has not usually been trained to recognize or appreciate the danger of these chronic suppurations to the general health, and the physician, including perhaps the bacteriologist, has not made a sufficiently close study of the tissues involved in these suppurations to enable him to draw proper conclusions, especially with reference to the complete cure of such cases under the most favorable treatment imaginable. For example, Bass and Johns state that the periosteum of the alveolus is "continuous with that of the surface of the jaw bone, but it also continues up and covers the neck of the tooth." This statement might lead to the belief that the root of the tooth is covered with a periosteum similar to that of bone and subject to the same physiologic and pathologic changes. Such is not the case.

It seems desirable to call attention to the peculiar characteristics of the outer hard tissue of the tooth root—the cementum—since a knowledge of the physiologic functions of this tissue in connection with the changes which take place, as a result of suppuration, presents the key for prognosis. The dentin, which forms the bulk of the root of the tooth, is covered with a layer of cementum, which corresponds in many respects to bone. The periosteum which lines the bone of the alveolar socket and the cementum covering the root are connected by many bundles of fibers of the peridental membrane, the ends of which are embedded in the periosteum and the cementum, respectively. The function of these fibers is to hold the tooth in position and cushion it against the force of mastication. Lying on the surface of the cementum between the ends of these fibers is a layer of cementoblasts, which correspond to the osteoblasts lying on the surface of the periosteum; and their functions are similar. The important difference between the two tissues is that the cementum does not have a blood supply corresponding to that in bone, nor does it have haversian systems.

If we do not fully appreciate this difference, we might naturally expect the same response and the same processes of repair in cementum which occur in bone as a result of periosteal inflammations. If the periosteum is stripped from bone, the bone may become necrosed, in which case the activity of the cells within the bone will separate the necrosed area and exfoliate it. Similar changes cannot take place in the cementum because of the lack of circulation of blood. When the peridental membrane is stripped from the cementum by suppuration, the cementum becomes a dead tissue which cannot be exfoliated, except in its entirety by the removal of the tooth. It is sufficiently porous to become saturated with the products of suppuration, and remains as a constant irritant to the overlying tissue. Therefore, there is established in each of these pockets a condition similar to that caused by a piece of necrosed bone continuously held in position.

All of the investing tissues of the teeth—the peridental membrane with its specialized cells and fibers, and the bone of the alveolar process—must be considered as tooth appendages, since they develop with the tooth and always disappear subsequently to its extraction. Likewise, whenever there is a suppurative detachment of the peridental membrane from the cementum, the fibers of the peridental membrane and the alveolar process corresponding to the area of detachment are absorbed, as has been shown by microscopic examination of the overlying tissue. A careful study of the tissues involved in these chronic suppurations will show that the suppurative process first attacks the tissue at the very surface of the root and strips it off, no soft tissue whatever remaining attached. The involvement of the tissue along the immediate root surface is always in advance of the involvement of the tissue farther removed from the root, and the bone of the alveolar process at any particular level disappears last, apparently by absorption rather than as a direct result of suppuration. This disease should, therefore, be considered a pericementitis, rather than an alveolitis. The bone of the alveolus is practically never laid bare by this disease, but is covered by the soft tissue membrane, which presents a granulating surface to the root. A "gum boil" or a sinus discharging through the gum seldom occurs; generally these result from abscesses occurring at the apex of the root of a tooth following the death of the pulp.

On account of the foregoing conditions, the word "cure" should be used with caution. Evidently some of those who have been studying these cases have considered them "cured" when no more endamebas were demonstrable, apparently without considering the tissue changes and conditions which prevent the closure of the pocket. A case should not be considered cured, when there remains the constant irritant—the denuded cementum—which maintains the harbor for a reinfection. This fact—that such treatment does not result in permanent cure—seems already partially recognized in the present report of Bass and Johns,[5] as they state that reinfection has occurred in about 12 per cent. of cases within four weeks.

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[1] Barrett, M. T.: Preliminary Report, Dental Cosmos, 1914, lvi, 948.

[2] Smith, A. J.; Middleton, W. S., and Barrett, M. T.: The Tonsils as a Habitat of Oral Endamebas, THE JOURNAL A. M. A., Nov. 14, 1914, p. 1746.

[3] Bass, C. C., and Johns, F. M.: New Orleans Med. and Surg. Jour., 1914, lxvii, 456.

[4] Evans, J. S., and Middleton, W. S.: Endamebic Pyorrhea and Its Complications, THE JOURNAL A. M. A., Jan. 30, 1915, p. 422.

[5] Bass, C. C., and Johns, F. M.: Pyorrhea Dentalis and Alveolaris, THE JOURNAL, this issue, p. 553.

It is also stated that a previous injury or inflammation seems necessary "to furnish a kind of a pocket" in order to provide a nidus for the endamebas, and that they "are not known to live on open surfaces." These statements should impress on both dentist and physician the possibilities of greater watchfulness of the gingivae and more careful management of operative procedures to prevent the injury which prepares the pocket for the endamebas. The pus pocket is always preceded by a gingivitis which may be so insidious as scarcely to attract the patient's attention. Most cases may be cured by very simple procedures, if undertaken previous to the detachment of the tissue from the root.

NYSTAGMUS AND VERTIGO

Vertigo and involuntary eye movements are two symptoms whose significance is frequently puzzling to the clinician. The frequency with which they are associated with disturbances of the internal ear suggests that this peripheral sense organ and its nerve offer an experimental basis of attack on the problems.

Wilson and Pike[1] have recently reviewed this subject, and have given a brief résumé of the experimental work they have carried on for several years.

The labyrinth of the ear is a definitely located sense organ supplied by the vestibular branch of the eighth cranial nerve whose function is to give information of change in position of the head, and whose destruction causes important and often lasting alterations in the posture of the animal. Impulses arising in it become effective only after they have reached a central mechanism and have there been transformed and sent out as efferent or motor impulses. Through its central connections there is more close association with the oculomotor muscles than with the skeletal muscles generally. Our conception of our position or change of position in space is due in large measure to the fusion of afferent impulses from the labyrinth and from the retinal and muscular apparatus of the eyes. The lack of agreement of the impulses from these different sources is one cause of vertigo.

Normal stimulation of the labyrinth comes from movements of the head. Despite the general acceptance by physiologists of Mach's view that actual fluid currents in such minute tubes as the semicircular canals are unthinkable, the hypothesis of the stimulation of their ampullary nerve endings by fluid currents has had a wide following among clinicians. This has led to a lack of appreciation of the rôle of pressure in the usual stimulation of the labyrinth, and of the significance of pressure on the central vestibular tract in intracranial disturbances.

Much confusion has existed also with reference to nystagmus. Wilson and Pike have endeavored to clear up this situation by pointing out that, although involuntary oscillatory movements of the eyes may arise from various experimental intracranial or other lesions, the labyrinthine type of nystagmus, consisting of alternate slow movements in one direction and quick in the opposite, is not encountered in any other experimental lesion which does not involve the vestibular tract. These papers furnish additional evidence that "if there is anything definite to say in regard to labyrinthine nystagmus it is that the cause of the slow deviation lies in the labyrinth or the vestibular tract," and that the quick return is a cerebral act indicating disturbance in the oculomotor rather than in the labyrinthine or vestibular mechanism.

A change in the position of the head in space is commonly, but not invariably, associated with a change in position of the eyes. Stimulation of the labyrinth of unusual violence always brings about a change in the position of the eyes unless there is some oculomotor deficiency, and usually also gives rise to a disharmony of the impulses from the eye and ear and other parts of the body. Impulses of ordinary intensity are harmonized or integrated and give rise to a definite orderly motor response which results in the restoration or maintenance of equilibrium. Disharmony of these various afferent impulses is attended by an incoordinated motor response—the objective sign of vertigo. Both the normal motor response and the incoordinated motor response are reflex responses.

From the time of Flourens in 1828, numerous investigators have worked on the labyrinth. Prior to Flourens, Purkinje studied rotation vertigo and laid the foundation for its laws. Later came Hitzig, who studied electrical stimulation and harmonized galvanic vertigo with rotation vertigo. Hitzig, Goltz and Bornhardt noted stimulation of the labyrinth with heat and cold, but it remained for Bárány to show the importance of the caloric test in clinical practice. As a result of these experimental investigations, the fundamental phenomena which accompany stimulation of the labyrinth became well known to physiologists. But it remained to explain which were essentially labyrinthine. Bartels and Wilson and Pike have furnished experimental evidence which leaves little doubt that the slow deviation is the only essential movement of nystagmus which is labyrinthine, and that the quick movement must be regarded as cerebral.

The part played by the cerebellum in labyrinthine nystagmus has long been in doubt. The more recent experiments of Wilson and Pike corroborate what they reported some time ago, that "neither the slow deviation nor the quick return has any necessary pathway or any indispensable center in the cerebellum."

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[1] Wilson, J. G., and Pike, F. H.: Some Considerations on the Physiology of the Otic Labyrinth, Arch. Int. Med., December, 1914, p. 911; The Mechanism of Labyrinthine Nystagmus ana Its Modifications by Lesions in the Cerebellum and Cerebrum, ibid., January, 1915, p. 31.

Bárány believes that the more complete recovery in man as compared with animals after labyrinthine extirpation is evidence of the retrogression of the vestibular system in man. Wilson and Pike object to this interpretation, and point out that the certainty and the severity of the motor disturbances immediately attending labyrinthine extirpation in the higher mammals is evidence of the persistence of the function of the vestibular mechanism. The more complete recovery in man is not necessarily to be interpreted as evidence of the retrogression of the vestibular system, but is to be regarded as evidence of the much greater degree of adaptability on the part of the highly complex somatic motor system and of the greater capacity for readjustment following certain lesions, inherent in the enormous development of association tracts in the central nervous system.

The modes of stimulation of the labyrinth, and its results, have been fairly well defined and are now available for diagnostic purposes. The deviation of the eyes which is the direct result of the labyrinthine irritation has a definite and now generally acknowledged pathway. Any irritative lesion here will cause labyrinthine symptoms—vertigo, nystagmus, etc.; and a destructive lesion will annul reactions normally produced from the labyrinth.

The quick phase which follows and is dependent on the slow phase has a separate and distinct pathway in the cerebrum. When this pathway is interrupted, they have found experimentally that while the normal slow deviation is present, the quick return movement is altered or suppressed. As this pathway passes through areas of the cerebrum in which lesions are difficult to diagnose, there is here the possibility of great usefulness.

In this issue Wilson and Pike[2] have shown the application of these principles to the diagnosis and treatment of vertigo as a symptom. Their complete study of this condition shows again the great value of scientific research applied to practical medicine.

THE DRINKING OF MINERAL WATERS

The drinking of mineral waters, particularly as it is practiced by thousands of patients who are sent for curative purposes to the numerous mineral spring resorts in all parts of the world, is an established therapeutic custom. The multitudes of persons who indulge in the water drinking at the spas, as well as the large number of physicians who repeatedly advise the treatment as an established routine, make it seem more than probable that the practice is a well-founded one. Yet we venture to believe that few at best of all those who adopt or prescribe the mineral spring therapy could offer a reasonably tenable explanation of precisely what they hope to accomplish thereby, and how they have succeeded. Thus it happens that the cure or the improvement of the patient is obvious; a reason for the satisfactory outcome is wanting. Consequently in some quarters there has arisen the same sort of nihilism in relation to mineral waters that one finds exhibited in respect to the use of drugs. It is the reaction against a blind empiricism.

When an interpretation of the alleged beneficial effects of drinking mineral waters has been indulged in, the answer is sometimes made that the effects are merely those of water drinking per se. Nothing specific is claimed other than a diuresis which has given rise to that overworked expression, "flushing out" the system — whatever it may mean. Again, residence at the mineral spas usually involves the simultaneous regulation of diet and the orderly pursuit of a carefully planned routine of living; also, it means a change of environment, new scenes and elimination of social and business worries. Rest and exercise, food, drink, baths — physical therapy, dietotherapy, balneotherapy, psychotherapy—are combined to create an internal and external hygienic environment of which the individual factors are not easily dissociated. The mineral water thus becomes a mere incident rather than a dominant force in the therapeutic success.

There are, of course, mineral waters which have a determined basis for their use. Strongly alkaline waters of the Vichy type have a rational use. Laxative waters find an explanation of their effects in the presence of known purgative salts. Chalybeate waters and those which contain arsenic may serve as useful means of administering well-known therapeutic agents. But for the majority of waters there exists a sort of chaos of explanation from which refuge is taken in the vague uncertainties of radio-activity or some similar indefinite novelty. For this reason we may welcome any serious attempt at a scientific analysis of the physiologic action of mineral waters, even if it leads us no farther than the domain of suggestive hypothesis.

The Prague pharmacologist, Professor Wiechowski, has based a tentative interpretation of the action of mineral waters on certain facts established by animal experimentation.[1] It is maintained that prolonged use of diets containing inorganic components in unlike proportions may lead to marked changes in the mineral composition of the body. Changes in the interrelations of the cations, for example, can be brought about. What is even more significant, however, is the assertion that organisms thus affected by an alteration of their usual inorganic makeup respond in unusual ways to various stimuli. An illustrative case is found in rabbits fed on an exclusive oat diet (which is especially deficient in calcium). They are exceedingly sensitive to skin irritants, and unduly resistant to fever-producing processes. According to Wiechowski, the mineral waters may bring about an alteration in the cation relations of the organism — a reaction depending in the individual cases on the makeup of the water ingested. These changes in the inorganic environment alter the responses of the organism. It is impossible to foresee at present what changes in all manner of functions this may involve. In any event, the Bohemian investigator believes that it is reasonable to ascribe the essential therapeutic effects of certain mineral waters to these alterations produced by their ingredients. It is not so much a matter of adding more inorganic salts to an organism already well provided with them, as it is a change in the equilibrium between the various ions. It is unnecessary to cite experimental evidence bearing on the point involved, for it is to the hypothesis primarily that we have aimed to call attention.

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[2] Wilson, J. G., and Pike, F. H.: Vertigo, The Journal A. M. A., this issue, p. 561.

[1] Wiechowski, W.: Ueber die wissenschaftlichen Grundlagen der Mineralwassertherapie, speziell des Karlsbader Mühlbrunns, Prag. med. Wchnschr., 1914, xxxix, No. 24. Sgalitzer, O.: Ueber die Wirkung des Karlsbader Mühlbrunns auf den Mineralstoffhaushalt der Kaninchen, Ztschr. f. Balneol., Klimatol. u. Kurort-Hyg., 1914, vii.

SOME CONSTITUENTS OF THE BLOOD

It requires little argument to emphasize the great scientific importance of learning as much as possible respecting the chemical composition of the circulating blood. A precise knowledge of the make-up of this fluid would serve to tell a good part of the story of tissue metabolism. Investigators have long realized the inherent difficulties both in detecting and in determining quantitatively various constituents of the blood, owing to the minute amounts in which they are present in a unit volume of the circulating medium at any moment. One hundred c.c. of blood — a large quantity to furnish at once — ordinarily contain not more than 0.1 gm. of sugar. Yet even this small content renewed or discharged from moment to moment in the course of the circulation may represent the exchange of no inconsiderable total amount of carbohydrate in the course of a few hours.

Other constituents are present in even smaller amounts at any given moment, and inasmuch as the methods of analysis hitherto current have involved the examination of single samples of blood, it is not surprising that many substances suspected in this fluid have never really been identified. By employing large quantities of blood obtained from large animals, Abderhalden[1] actually separated from it some of the amino-acids absorbed from the alimentary tract. In other cases progress has depended on the application of special microchemical methods with the uncertainty that goes with them.

Several months ago we referred to a method of removing diffusible substances from the circulating blood of living animals by dialysis. This process, devised by Abel, Rowntree and Turner[2] of the Johns Hopkins Medical School, consists essentially in the continuous passage of the blood from an artery through a system of tubes made of celloidin immersed in a saline solution or artificial serum, and its return to a vein, thus yielding by dialysis certain of its constituents to the fluid surrounding the tubes. The relative proportions of the different non-protein nitrogenous substances in the diffusate do not vary greatly from those in the blood. The latest contribution attributable to this method is the actual separation of two amino-acid derivatives of protein — alanin and valin — in crystalline form.[3] Histidin and creatinin have been shown by reactions to be present. Oxyacids were found in noticeable proportions; lactic and beta-oxybutyric acids in particular have been identified.

Current Comment

HEALTH INSTRUCTION IN AN INDIANA COUNTY

Common sense is an uncommon quality. Those who in their early youth read and enjoyed the William Henry Letters, will recall that this was a refreshing characteristic of that young hero. When sent away to a boarding school, he was told that he would have to take dancing lessons in order to learn how to enter a room. He could not see the need of taking lessons for this purpose. He said, "Just walk right in." One of the most difficult lessons to learn is that the way to do a thing is to do it. The county health commissioner of Union County, Indiana, feels that one of his duties is to teach the people of the county how to keep well. He has accordingly prepared a little seventy-five page pamphlet, made up largely of material published by the various state boards of health. The board of county commissioners made an appropriation to send a complimentary copy to every home in the county. The pamphlet is simply but forcibly written, and contains chapters on the home, contagious diseases and the baby. In the first chapter, the people are told how to keep their homes clean and healthful, how to dispose of their garbage, how to care for their food and how to take care of their bodies. Directions for disinfection and especially directions for various contagious diseases make up the second chapter, while the third and most important contains directions to mothers for the care of themselves and their children. We have been a long time in learning that if the teacher of good health would compete with the patent medicine man, he must meet him on his own ground. Instruction of the people on health topics is a public duty. It should not be left to professional zeal or to philanthropy. The publication and distribution of such pamphlets as the Union

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[1] The Amino-Acids in the Blood, Current Comment, The Journal A. M. A., Feb. 21, 1914, p. 621.

[2] Abel, J. J.; Rowntree, L. G., and Turner, B. B.: On the Removal of Diffusible Substances from the Circulating Blood of Living Animals by Dialysis, Jour. Pharmacol. and Exper. Therap., 1914, v, 275.

[3] Abel, J. J.: Rowntree, L. G., and Turner, B. B.: On the Removal of Diffusible Substances from the Circulating Blood of Living Animals by Dialysis, II, Some Constituents of the Blood, Jour. Pharmacol. and Exper. Therap., 1914, v, 611.

County Health Book are directly and solely for the public good and will yield large dividends in the form of better health and prosperity for the people. If each county in the nation had a health officer as wide awake and a board of commissioners as broad minded as those of Union County, Indiana, the problems of the prevention of disease and the prolongation of life would be immensely simplified.

SCHOLARSHIPS IN MEDICAL EDUCATION, AND THE "POOR BOY"

As various reports on medical education have shown, it is the proprietary or commercially inclined medical schools which have been most avowedly solicitous for the "poor boy" but which do the least for him in return for what he does pay. The cry of "a medical education for the poor boy," therefore, has often meant a poor medical education (dear at any price) at the same or even greater cost than a good one, and this for the boy who is perhaps "poor" in scholarship rather than in purse. There is certainly no reason for encouraging the dullard or the ignoramus, even if he is also indigent, to attempt to practice medicine at the expense of the "poor" public. Yet it would be unfortunate if the career of medicine were indeed to be closed to ambitious and able young men because of lack of means. This danger has been emphasized in recent years by the increased expense connected with the teaching of medicine, which in turn, in some of the medical schools, has led to increased charges for tuition. On the other hand, some of the best medical teaching institutions, particularly the medical departments of state universities, have very low tuition fees, or, in some instances, make no charge except for laboratory fees. Again, in some of our best medical schools having high tuition fees, opportunities exist for determined students to make at least a part of their expenses; but the attempt to earn all expenses, while doing justice to the exacting work of a medical course, means a strain which few constitutions are fitted to endure. The solution of the problem lies in free scholarships to be awarded to good students who cannot afford to pay their own way. A review of the medical college announcements shows there is now a total provision for about 170 scholarships,[1] most of which are granted annually and are reserved for students of ability who are in need of financial aid. Included in the total are several which have been granted in recent years. In 1912, three scholarships were established at the Leland Stanford Junior University, School of Medicine, from "The Alumni Jordan Medical Scholarship Fund." In 1913, the Philadelphia Alumni Society of the University of Pennsylvania Medical Department founded a scholarship in honor of Dr. Roland G. Curtin. In 1914, through the generosity of an anonymous donor, ten free scholarships in the University of Cincinnati College of Medicine were announced. Last month a gift from Mr. James A. Patten of $27,000 was made to the Northwestern University Medical School to provide an endowment for eight free scholarships, and of these, two are to be awarded each year to the students with the highest standing in the College of Liberal Arts who enter the medical school and need such aid. It is to be hoped that these benefactions will serve as suggestions to men who are considering the direction which their philanthropies shall take, and that eventually all our best medical schools may have at their disposal a number of free scholarships sufficient to ensure that no promising student whose talents lie in the direction of medicine need to be prevented by poverty from entering on that work.

THE PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

Beginning with January, 1915, the National Academy of Sciences has instituted the issue of a monthly journal, the *Proceedings*, which, in addition to being the official organ of publication of the Academy, will serve as a medium for the prompt presentation of brief original papers by members and other American investigators. Its aim will be thus to furnish a comprehensive survey of some of the more important results of the scientific research of this country, and it is intended to supplement, not replace, the papers appearing in special journals. The first number of the *Proceedings* contains, among others, papers on physiology and genetics, including a contribution by Davenport on "Violent Temper and Its Inheritance." This is an attempt to study the hereditary behavior of some of the elements of moral action — to analyze, by the methods of the Eugenics Record Office, the family history of persons who have marked emotional traits. Violent and more or less periodic outbursts of temper occur in families which are characterized by prevalence of epileptic attacks; also in those exhibiting cases of mania, and in others in which "hysteric" attacks are common. The special form of the attacks differs somewhat in these classes of families, but the method of inheritance of the tendency is the same in all, and it seems probable that in each class the simple symptoms of the emotional outburst are modified by the differences in these three classes of the nervous condition. The fact that the tendency to outbursts of temper does not skip a generation, according to the report of 165 family histories of wayward girls in state institutions, indicates that it is a positive or dominant trait. This tends to emphasize that such features have a typical hereditary basis, a statement which many sociologists who hold differences in the "conditions of life" responsible for the differences in men, are quite likely to dispute.

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[1] The medical schools which provide for scholarships and the number in each are as follows: Leland Stanford Junior University, School of Medicine, 3; University of California, College of Medicine, 1; Northwestern University Medical School, 8; University of Illinois, College of Medicine, 4; Indiana University, School of Medicine, 10; Johns Hopkins University, Medical Department, 7; Boston University, School of Medicine, 5; Harvard University Medical School, 23; Detroit College of Medicine and Surgery, 3; Washington University Medical School, 1; Columbia University, College of Physicians and Surgeons, 31; Syracuse University, College of Medicine, 1; University of North Carolina, School of Medicine, 1; University of Cincinnati, Medical College, 10; Western Reserve University, School of Medicine, 1; Hahnemann Medical College and Hospital, 3; Jefferson Medical College, 2; University of Pennsylvania, School of Medicine, 54; University of Virginia, Department of Medicine, 1.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

New Clinic Opened.—A new tuberculosis clinic is to be opened at Ninth and Wilson Streets, Los Angeles, by Health Commissioner Luther M. Powers.

State Medical Board Appointments.—On January 22, the governor appointed Drs. Arthur M. Smith, Oakland; H. Clifford Loos, San Diego, and Harry V. Brown, Los Angeles, members of the State Board of Medical Examiners for a term of four years. Dr. Smith succeeds Dr. Samuel H. Buteau, Oakland, while the other members were reappointed. ——Dr. Adelaide Brown, San Francisco, has been appointed a member of the State Board of Health to succeed Dr. Oscar Stansbury, Chico; Dr. Frederick F. Gundrum, Sacramento, to succeed Dr. Wallace A. Briggs, Sacramento, and Dr. George F. Bright, San Francisco, to succeed Dr. Martin Regensburger of the same city.

FLORIDA

New Home for Tuberculous Insane.—The board of commissioners of state institutions has made arrangements at the Florida Hospital for the Insane, Tallahassee, for a building especially for the housing and treating of patients of the hospital who are afflicted with tuberculosis.

Model Vital Statistics Ordinance Passed.—The model ordinance for vital statistics has been passed by twenty Florida municipalities in addition to the registration cities. Eight other municipalities are expected to pass the ordinance in the near future, and it is under consideration by eleven other municipalities.

Branch Bacteriologic Laboratories Opened at Miami and Tallahassee.—The State Board of Health has recently opened two bacteriologic laboratories, which will be operated as branches of the central laboratory at Jacksonville. Both will be in charge of assistant bacteriologists of the State Board of Health, the one at Miami in charge of Dr. Iva C. Youmans and the one at Tallahassee in charge of Dr. William A. Claxton.

Hospital News.—A contract for the Morton F. Plant Endowed Hospital, Clearwater, has been awarded for $20,478.——There is at present at least $15,000 available for the construction of a new city hospital, Miami.——The Deland Hospital, located in the Nutt House, Deland, is now open and ready for the reception of patients. The institution at present will accommodate eight patients.——Former Governor Albert W. Gilcrist makes an urgent appeal for the establishment of a state hospital for indigent crippled children to be built in Jacksonville in accordance with a bill passed by the legislature of 1911.——The Emergency Hospital at West Palm Beach was reopened last month.——The mayor of Jacksonville is at the head of a movement to bring about the erection of a hospital for Jacksonville and Duval County and the Poor Farm at the City Prison Farm site. ——Dr. Calvin D. Christ, Orlando, has opened a sanatorium in Orlando in a building constructed especially for hospital purposes.——The East Coast Hospital Association has given notice of its intention to apply for charter. Its purpose is to establish a hospital at St. Augustine.

GEORGIA

Personal.—Dr. Robert C. Woodard has been appointed local surgeon for the G. S. and F. Railway at Adel.——Dr. Leon L. Moye, Vidalia, was operated on recently at Atlanta for peritonitis.

Surgeon Club Symposium.—The Georgia Surgeons' Club, Atlanta, will hold a two-day clinic in that city, February 25 and 26. On the evening of the first day, a symposium on "Surgical Indigestion" will be held.

Physicians Club Organized.—The Physicians' Club of Atlanta was organized, January 19, with an initial membership of more than 100, and the following officers were elected: president, Dr. George P. Huguley; vice-president, Dr. Edgar L. Griffin; secretary, Dr. S. T. Harris, and treasurer, Dr. William A. Arnold.

Work for Eradication of Hookworm.—The State Board of Health has issued a bulletin giving details of the hookworm work carried on in the counties of the second district. In November, 1911, the department of field sanitation of the State Board of Health began to institute free dispensaries in the counties of the second district. Work has been carried on in Early, Mitchell, Colquitt, Decatur, Grady, Thomas, Tift and Worth counties. A successful campaign is now in operation in Miller County and an appropriation for work begun in January has been secured for Baker County. The work must be done by June 30, 1915, because the organization then ceases.——Dodge County on January 21, appropriated $150 to supplement the funds given by the Rockefeller Institute for the campaign against hookworm and for better sanitation.——The work of the Rockefeller Sanitary Commission will come to an end in Georgia, June 30. Meanwhile, the State Board of Health is undertaking work in the various counties, Dr. Floyd D. Rodgers, Columbia, S. C., assistant director of field sanitation, being now engaged in Richmond County, where 66 per cent. of the rural population are said to be infected with the disease.

ILLINOIS

Leper at Club.—Angelo Lunardi, night watchman at the Exmoor Country Club, Highland Park, is suffering from tubercular leprosy and has been placed in isolation pending the decision of the question of his deportation.

College Closed on Account of Scarlet Fever.—McKendree College at Lebanon was closed early in February on account of the reappearance of scarlet fever in the school. Two new cases were found This is the second time within a month that the school has been closed on account of this disease.

Personal.—A committee of medical men from the Winnebago County Medical Society of Rockford presented a petition to the mayor, January 30, signed by practically every member of the society, requesting him not to accept the resignation of Dr. Daniel Lichty, Rockford, from the board of the Tuberculosis Sanatorium.——Dr. Thomas B. Knox, Quincy, has resigned as president of the Adams County Tuberculosis Society.——Dr. William Healy, Winnetka, has passed the examination for director of the Juvenile Psycopathic Institute, Chicago, with the highest average.

Chicago

Hospital Site Selected.—A new hospital to cost about $100,000 and to be known as the Concordia Evangelical-Lutheran Hospital, is to be erected on Hadden Avenue, near Kedzie, where the trustees have acquired a tract 300 by 117 feet.

Ventilation of Street Cars.—Under an amended ordinance the health department now has authority to supervise the ventilation of elevated and surface cars. Recently samples of air were taken from 220 cars. In 150 of these carbon dioxid was found in quantities far in excess of the standard set by the ordinances and suit will be filed on these violations. Suits have also been brought for failure to operate ventilating fans in 128 instances.

Society Incorporated.—The Robert Koch Society for the Study of Tuberculosis, which has been in operation for about two years, has been incorporated with the following charter members: Drs. Theodore B. Sachs, Henry B. Favill, Frank S. Johnson, Ethan A. Gray, John Ritter, Orville W. McMichael and James A. Harvey. One of the prime objects of the organization is the dissemination of information on tuberculosis among medical men at large.

Safeguarding Against Scopolamin Casualties. — The authorities of Michael Reese Hospital announce, as the result of their experience after a series of about forty obstetric cases treated by the scopolamin-morphin anesthesia, the so-called "Twilight Sleep," that they will not use this method in labor except with the express guarantee of the patient that the hospital shall be free from all liability as regards ill results to the mother or the child.

INDIANA

Decrease in Sales of Narcotics.—A report from the State Board of Pharmacy shows that there has been a very marked decrease in the sale of all narcotic drugs during the year 1914. This is thought to be due to the anticocain law which went into effect in 1913.

Sanitary Survey.—A sanitary survey of the schools of Porter County was started February 1 by Surg. Taliaferro Clark, U. S. P. H. S., with five assistants. This survey has been requested by Dr. Simon J. Young, Valparaiso, health commissioner of Porter County.

Free Clinic at Anderson.—St. John's Hospital, Anderson, has offered the clinic committee of the Council of Women of that city, the use of two well lighted rooms in the basement of the new hospital addition for the use of the clinic. The addition will be opened about March 15.

Vaccination Required by Large Industries.—The Union Traction Company of Indiana, it is reported, has issued an order at Muncie that all employees must be vaccinated if not previously thoroughly protected.——City Health Officer Noah D. Berry, Muncie, has also canvassed the large industries of the city asking the managers to secure prompt and effective vaccination of all employees, and it is believed the majority will comply with this request.

Bills Before the Legislature.—One of the most important bills introduced into the Indiana legislature and one which has received wide-spread support from medical men is the bill providing for the registration and quarantining of tuberculosis patients. This bill places tuberculosis in the same class as other contagious diseases. It provides for the complete registration of cases of this disease and report within twenty-four hours after discovery to the local health officer, making this report obligatory not only on physicians but also on nurses, employers, teachers and others; also requiring the complete disinfection of all houses wherein tubercular patients have died.——One of the legislative measures before the present house of representatives, which has received condemnation by members of both parties gives the governor, secretary of state and auditor of state power to appoint the secretary of the State Board of Health. This measure is aimed to remove Dr. John N. Hurty, Indianapolis, state health commissioner, who for nearly twenty years has been at the head of the hygienic, sanitary and medical work in this state.

MARYLAND

St. Luke's Hospital Closed.—Owing to lack of funds, St. Luke's Hospital, Baltimore, has been forced to close.

Brady Institute in Service.—The Brady Urological Institute at Johns Hopkins Hospital has been put into full service. Eight patients have been transferred from the hospital proper to the new rooms of the clinic. Fourteen ward patients have been installed in the last week and the admittance of the room cases put the new building into active service. No ceremonies were held in connection with the inauguration. The formal dedication of the institute is to be held in the spring. The building is entirely complete, with the exception of full equipment for the laboratory work and experiments. Nearly $250,000 has been spent in the venture, the gift of Mr. Brady of New York.

MASSACHUSETTS

Fire at State Infirmary.—Fire in the combination cloth and storage dormitories of the State Infirmary, Tewkesbury, caused damage of $2,000. Panic was avoided by the efforts of the superintendent and attendants.

Health Officers Elected.—At the annual meeting of the Massachusetts Association of Boards of Health, held in Boston, January 28, Dr. Milton J. Rosenau, Boston, was elected president, and Dr. Francis H. Slack, Boston, secretary.

Ambulance Chasers Law.—The first case under this new 1914 law accuses Harry Noonan of soliciting, procuring and attempting to procure the management and control of the claim of Gertrude Lake against the Boston Elevated Railway for an accident which occurred January 11.

Age Limit Raised.—The Massachusetts State Department of Health announces that for the first examination for the position of district health officer, under the regulations prepared by the Public Health Council of the department governing appointments and promotions of district health officers, the age limit has been raised from 32 to 36 years.

Censure of Dr. Cabot.—Publicity is given by the daily press to the fact that the Dorchester Medical Society at a recent meeting passed resolutions censuring Dr. Richard C. Cabot, Boston, for his criticism of the medical profession. Similar resolutions presented at the last meeting of the Norfolk District Branch of the Massachusetts Medical Society, in which district Dorchester lies, were debated and laid on the table.

Personal.—Dr. George B. Magrath, Boston, has been reappointed medical examiner of Suffolk County.——Dr. James L. Wellington, Swansea, the oldest graduate of Harvard Medical School, recently celebrated his ninety-seventh birthday anniversary.——Dr. William L. Richardson, Boston, has been appointed a trustee for the Perkins Institution and the Massachusetts School for the Blind.——Drs. Frederick C. Shattuck, Boston, and Clarence J. Blake, Boston, have been elected members of the board of managers of the Boston Children's Hospital.

MISSOURI

Asks Shifting of Appropriation.—The board of managers of the State Sanatorium for Tuberculosis of Mt. Vernon appeared before the house committee of Jefferson City, January 28, and made a plea for a more advantageous distribution of the appropriation recommended by the legislative committee. The amount appropriated was sufficient, but they asked that more buildings for patients be provided as this is more urgent at present.

Personal.—Dr. Charles R. Woodson, St. Joseph, was assaulted by a man who entered his office presumably to consult him professionally. Dr. Woodson overpowered him but was struck on the head with a pistol, suffering a fracture of the outer plate of the frontal bone. The man was intoxicated and later said he had no recollection of the assault. Dr. Woodson is recovering from the attack.——Dr. Dexter B. Farnsworth, Springfield, was presented with a gold-headed cane by the members of the Greene County Medical Society in recognition of his sixteen years' service as treasurer. He declined reelection.——Dr. Walter S. Wheeler, health commissioner of Kansas City, who underwent an operation last month, is said to be doing well.——Dr. James J. Brien, Oronogo, fractured a rib and sustained cuts and bruises by the overturning of his automobile, between Oronogo and Galesburg, recently.

St. Louis

Asks Appropriation to Fight Tuberculosis.—The St. Louis Society for the Relief and Prevention of Tuberculosis made an appeal at a public hearing with the board of estimate and apportionment for an appropriation of $75,000 to assist in the work against tuberculosis in St. Louis.

Research Department to Be Discontinued.—The board of directors of the Barnard Free Skin and Cancer Hospital took action at their December meeting to discontinue the research department as at present operated, the order to take effect April 1. The present financial situation is responsible for the retrenchment.

NEW YORK

Sanatorium Bonds Purchased.—The Trust and Deposit Company of Onondaga, Syracuse, has purchased the $185,000 bond issue for a tuberculosis sanatorium for Onondaga County, at a premium of $2,645.

Senate Gets Coroner's Bill.—The bill abolishing coroners in New York City and substituting medical examiners has been presented to the legislature with the endorsement of the New York City administration.

New Children's Hospital.—The Rochester Public Health Association has remodeled the third floor and attic of its building on Troup Street, to provide hospital wards for work by the association in its charter as a children's hospital.

Parole of the Insane.—The State Charities Aid Association reports that the reorganization of the parole system in the fourteen state hospitals for the insane has saved the state $87,000 in a year. Under this system many patients are returned to their homes and are frequently examined by medical experts. It is found that frequently the home environment has proved beneficial, and as the cost of maintenance of each patient is $200 per annum, this means a considerable saving to the state. The association advocates a judicious extension of the system.

New York City

Classes for Abnormal Children.—On February 8 there was opened at Speyer School, which is the experimental school of teachers college, a special class for exceptional children under the direction and with the cooperation of specialists in education psychology, elementary education and physical education of the college staff.

Caring for Mental Defectives.—Charity Commissioner Jerome Kingsbury has decided to consider the plan for a clearing house for mental defectives submitted by Dr. Max

WAR NOTES

Red Cross Reenforcements.—The American Red Cross announces that three surgeons will leave for Europe shortly. These are Dr. Earl B. Downer, Lansing, Mich., who is assigned to Hospital Unit No. 1 at Belgrade, Servia, and Drs. James E. Stowers, Kansas City, Mo., and Edgar L. Gilcreest, Gainesville, Tex., who will replace two of the American surgeons in the Red Cross Hospital at Paignton, England.

Fatalities in French Corps.—The first list that has come to hand that makes any pretensions to completeness appears in the *Caducée*, which has just arrived. It gives the names and titles of fifty-two French surgeons who have been killed and of thirty-one wounded. The list of killed includes two undergraduates, Senator Reymond, and Dr. A. Marie, physician in chief of the Villejuif asylum. Their deaths were mentioned in the Paris Letter at the time.

Meningitis Outbreak Traced to Valcartier Camp.—It is stated that the Canadian troops will remain in England until all the meningitis cases at Salisbury Plain have terminated. The outbreak started at Valcartier, the first death taking place at Quebec and the second on arrival at Plymouth. There have been twenty-five deaths and only two recoveries out of twenty-nine cases. Two patients are now in the hospital, regarded as incurable. Five cases have occurred among children at Salisbury. Professor Ashworth of the Lister Institute is studying the outbreak.

Appreciation for Special Gallantry Under Fire.—The French government publishes notices in the official journals calling attention to the special services and gallantry of certain persons, describing each by name and title and the special action in detail. The Austrian government does the same, and these touching tributes often fall to the lot of the members of the medical and nursing staff. The last *Wiener klinische Wochenschrift* gives the names and titles of six surgeons thus singled out for special mention on account of brave and devoted services under fire. (Anbefohlen, dass die kaiserliche belobende Anerkennung bekanntgegeben werde: in Anerkennung tapferen und aufopferungsvollen Verhaltens vor dem Feinde; the name and title follows. The French notice reads: Le gouvernemente porte à la connaissance du pays la belle conduite, etc.) The German authorities decorate with the iron cross for special gallantry under fire or services otherwise; the mere conferring of this decoration is equivalent to calling the attention of the country to the recipient's devoted services.

Aid for Belgian Physicians.—Dr. F. F. Simpson, Jenkins Arcade Building, Pittsburgh, Pa., treasurer of the committee of American physicians for the aid of the Belgian profession, announces for the week ended Feb. 6, 1915, the following contributions:

Dr. Willard Bartlett, St. Louis, Mo.		$ 10.00
Dr. M. Manges, New York, N. Y.		15.00
Dr. G. D. Hale, P. A. Surg., U. S. N., San Francisco, Cal.		10.00
Dr. Alfred Wiener, New York, N. Y.		10.00
Dr. John Woodman, New York, N. Y.		5.00
Dr. Robert T. Frank, New York, N. Y.		10.00
Cash—B, Pittsburgh, Pa.		10.00
Dr. R. O. Raymond, Flagstaff, Ariz.		10.00
Dr. A. Hymanson, New York, N. Y.		5.00
Dr. Mazyck P. Ravenel, Columbia, Mo.		15.00
Oklahoma State Med. Assoc., Muskogee, Okla.		100.00
Dr. H. H. Sherk, Pasadena, Cal.		25.00
Dr. Charles Lee King, Pasadena, Cal.		20.00
Dr. James Williamson, Philadelphia, Pa.		5.00
Dr. J. S. Kauffman, Blue Island, Ill.		5.00
Dr. John P. Treanor, Dorchester, Mass.		10.00
The Clinical Club of Albany, Albany, N. Y.		25.00
Dr. Thomas J. Watkins, Chicago, Ill.		50.00
Dr. H. E. Oesterling, Wheeling, W. Va.		10.00
Dr. Leslie W. Schwab, Chicago, Ill.		2.00
Dr. A. Howard Smith, Marietta, Ohio		5.00
Dr. Woodson H. Taulbee, Maysville, Ky.		5.00
Total		$ 362.00
Previously reported receipts		2,166.00
Grand total		$2,528.00
Previously reported disbursements	$2,090.00	
Disbursements week ending Feb. 6th	440.00	
Total disbursements		$2,530.00
Deficit		*$2.00*

Dr. Lewis S. McMurtry, Louisville, Ky., and Dr. Charles A. L. Reed, Cincinnati, Ohio, have consented to become members of the committee of American physicians for the aid of the Belgian profession. At the request of the treasurer, the executive committee has arranged to have the accounts audited quarterly. The first audit will be about March 20.

LONDON LETTER

London, Jan. 22, 1915.

First Issue of New Journal

In the *Journal of the Royal Naval Medical Service*, a new periodical which made its first appearance in January, Surgeon-General Donald T. Hoskyn, R. N., of the Royal Naval Hospital, Hong Kong, has a note on the use of subcutaneous injections of the salts of emetin. He refers to six cases, of which he reports two; first, one of diarrhea with some constitutional disturbance and stools containing blood and mucus, was successfully treated with subcutaneous injections of emetin hydrochlorid, ⅙ grain, morning and evening. In the second case, in which 1 grain of emetin was administered daily at one dose, amebas were found. The patients who received only 1 grain were cured with an average of 5½ doses in fifteen days, while those who received ⅙ grain twice a day required 16½ doses and forty and one-half days. Thus he concluded that larger doses save time. The author also speaks from experience of the value of the drug in simple colitis, in which only one injection was required to effect a cure. The new journal contains also articles on the British antarctic expedition, 1910-1913, by Staff-Surgeon E. L. Atkinson, R. N.; on the naval action off Heligoland, by Fleet-Surgeon Walter K. Hopkins, R. N.; on the treatment of the wounded at three of the naval base hospitals, by the respective medical officers; a simple method of localizing bullets, by Surgeon S. Bradbury, R. N.; a report by Fleet-Surgeon M. L. S. Rodd, R. N., on the transport and treatment of wounded on the hospital ship *Plassy*; on typhoid and its prevention, by Fleet-Surgeon P. W. Bassett Smith, C. B., R. N., and on the flying service from a medical point of view, by Staff-Surgeon Hardy V. Wells, R. N. The journal is edited by Fleet-Surgeon R. C. Munday, R. N., and Fleet-Surgeon W. L. Martin, R. N.

The War

THE AIR RAID ON THE EAST COAST

After dark one evening, German airships appeared over the unfortified towns of Yarmouth and King's Lynn and dropped bombs. In the former town a shoemaker, aged 53, and a woman aged 72 were killed by the explosion. At King's Lynn a woman, aged 26, and a boy, aged 14, were killed. Arrangements have been made by the police in London, and other places where air raids are likely to take place, for the prompt rendering of first aid to the victims. Dressing stations have been arranged to which physicians have been assigned. A warning has also been issued to all persons to take cover preferably in basements or cellars, in case of aerial attack. It is pointed out that in the streets, danger will be incurred not only from bombs dropped from air craft but also from the falling of missiles from guns directed against them.

THE SHORTAGE OF PHYSICIANS

Women have been admitted to the medical profession in this country for about a generation, but their practice apart from hospitals and even to a certain extent in them has been almost confined to women and children. This is partly due to their own desire and partly to the view of the public as to their sphere. The war has considerably altered the position. At the front, five hospitals are staffed entirely by women. At home, the scarcity of physicians resulting from the needs which are constantly increasing in consequence of the expansion of the army has produced a great demand for women physicians and dispensers to fill the places vacated by men. Another cause of increased demand for women physicians is the national insurance act. Under it five million women are insured and a great number take advantage of the free choice of physician allowed and select a woman. At some hospitals, the difficulties in filling vacancies in the resident staff is so great that it has been found impossible to carry out the rule by which appointments must be held by qualified physicians. Medical students have to be appointed. It is understood that the War Office will require 1,200 more physicians in connection with the new armies. This, of course, will further increase the difficulty.

A MOTOR OPERATING THEATER AND A MOTOR LABORATORY

A motor operating theater has been devised by an Aberdeen surgeon, Mr. G. H. Colt, with the idea of constructing the smallest theater in which an operation can be performed in comfort, and arranging that the contents shall be as light as possible. By using a 3 ton chassis it has been found that the length of the interior of the theater can be increased to 13 feet 4 inches, and the width to 6 feet 6 inches. In addition, a cab can be provided in front 5 feet wide and 3 feet 6 inches from front to back. The design is intended to provide for the continuous use of two operating tables. The scheme has not yet been adopted by the War Office. A fully equipped motor bacteriologic laboratory has been placed at the service of the War Office by an anomymous donor. The main laboratory is 6 feet 6 inches long and 6 feet wide, and is equipped with glass covered bench top, sink, centrifuge, balances, microscope, book shelf, water cistern, reagents, etc. A smaller compartment 2 feet 10 inches in depth by 6 feet wide is separated from the laboratory by sliding doors and contains two incubators, hot air and steam sterilizers, still and condenser, autoclave and water bath. Electric current for general and microscopic illumination is obtained by a dynamo driven from the engine. In association with the laboratory car is a motorcycle with side car attachment which provides a means of fetching pathologic fluids and specimens from points nearer the firing line than the car itself would ordinarily reach. Captain A. C. H. Gray, assistant professor of pathology at the Royal Army Medical College, is in charge of the laboratory.

BRITISH HOSPITALS FOR THE BALKANS

The dispatch from this country of a hospital unit for Serbia has been previously reported in THE JOURNAL. Two more hospital units are now being sent to the Balkans, one to Serbia and the other to Montenegro. The Serbian unit is in charge of Mr. James Berry, the well-known surgeon, and will be transported free of cost by the British Admiralty. A full medical and surgical outfit, as well as clothing, and other comforts for the Serbian people will be taken. Excepting one surgeon and the radiographer, the staff consists almost entirely of women—the house surgeon, dressers, eight nurses and five women orderlies. It is being furnished by the Royal Free Hospital, which is the medical school for women in London, to which Mr. Berry is senior surgeon. The unit for Montenegro is in charge of Dr. F. G. Clemow, and the staff consists of two surgeons, two trained nurses, two voluntary aid detachment women, and four male orderlies.

PARIS LETTER

PARIS, Jan. 21, 1915.

The War

INTERNS OF THE HOSPITALS AND THE WAR

The minister of war has recently decided that medical students who have passed the *concours* for internships in cities where there is a Faculté de médecine, may, so long as the war lasts, be nominated at their request where vacant places exist for the grade of *médecin aide-major* (grade corresponding to that of sub-lieutenant). In order to qualify they must have filled the position of intern for at least a year and have had the four years' work required for the doctor's degree. Professor Landouzy, dean of the Faculté de médecine de Paris, has drawn the attention of the minister of war to the fact that the second condition may deprive the health service of a considerable number of valuable assistants. It frequently happens that the interns, being more devoted to the hospital than to the school, postpone the examinations which permit them to qualify for the doctor's degree. So far as competence goes, however, the years of the internship, lived in contact with patients, are much better guarantees than the years of class-room instruction. As Landouzy says, between the student who has passed all his examinations and the student performing the duties of an intern there is the same difference that there is between a cadet finishing his course in the military school and the soldier who has seen active service. There are interns who, though they have had only three years' class room work, are expert assistants, whose aid would be particularly desirable under present circumstances.

The medical group in parliament in a meeting held under the presidency of Dr. Léon Labbé, senator, has decided to ask the minister of war for the immediate nomination to the grade of assistant physician (corresponding to that of noncommissioned officer) of medical students who have had three years' of medical school work and interns of the hospitals in cities where there is a faculté de médecine.

THE FOOD-SUPPLY OF THE ARMIES IN THE FIELD

At the last session of the Société de pathologie comparée, M. Maurice Piettre, a veterinary officer, presented a long report on this subject. In order to economize the stock of the country, already much depleted by the first five months of the campaign, it would be desirable to have recourse, as has already been proposed, to pork, which is very nutritious and cheap at this time of the year. The real solution of the problem, however, consists, according to M. Piettre, in the liberal use of frozen meats from South America and Australia, the purchase of which, in spite of speculation, should permit an important economy in our home-grown meat. M. Piettre has studied carefully the adaptation of the food-supply to the new conditions of the war—a war of siege with sojourn in trenches where it is almost impossible to supply cooked meats and vegetables. The solution will consist in putting into practicable form the physiologic ration for intensive labor (150 gm. of albuminoids, 100 gm. of fats and 500 gm. of carbohydrates). The problem of albuminoids has already been solved by the regulation 300 gm. can of meat in which, the waste matter having been removed, there is from 50 to 60 gm. of fat. Another class of canned food (vegetables) needs to be devised which shall contain the remainder of the ration of fat, that is, from 100 to 150 gm. of lard or roast pork and 500 gm. of vegetables (carrots, peas, beans, string beans, lentils, etc.) in suitable mixtures and with suitable seasoning. Provisions for marching or for the trenches would thus be reduced to two classes of cans,, one of meat (beef or pork) the other of vegetables with fat, which could be warmed up in a few minutes by the use of solidified alcohol.

The excessive use of meats presents many inconveniences. The need of vegetables and even of cooked fruits (apples and prunes) is keenly felt in the trenches. As the chemist, Armand Gautier, has said, there is danger in drawing more than 60 or 65 per cent. of the food nitrogen from flesh foods. The weight of the protein ought not to exceed one-fourth of that of the ternary substances.

A SIMPLE MEANS OF EXTRACTING FOREIGN BODIES IN WOUNDS OF WAR

In a recent session of the Académie de médecine, Dr. Lacroix called attention to the procedure of injections of hydrogen peroxid in wounds of war in which bones are fractured. The foaming up from the interior of the wound brings the foreign bodies with it. Independently of Dr. Lacroix, other surgeons have experimented with this procedure, and it has given good results when the foreign bodies consisted of fragments of clothing. It is less efficacious when metallic fragments are present, especially if they have become encrusted into the walls of the wound.

PARLIAMENTARY INVESTIGATION INTO THE HEALTH OF THE ARMY

The commission of public hygiene of the Chamber of Deputies has asked the minister of war for an opportunity to collect information with regard to the working of the health services of the army. Three subcommissions of four members each are about to visit the sanitary formations. The first subcommission accompanied by Dr. Chavasse, medical inspector-general, will visit the army zone. During its absence the other subcommissions will investigate the hospitals, etc., in the zone of the interior with a view to suggesting all possible improvements.

BERLIN LETTER

BERLIN, Jan. 12, 1915.

The War

MEDICAL CASUALTIES

According to the latest official list, 132 medical men have so far been killed in the war, 22 wounded, 45 have died and 166 are missing or prisoners. Among the medical victims of the war are, unfortunately, three distinguished scientists. A few days ago, Professor Jochmann, the medical head of the infectious department of the municipal Rudolph Virchow Hospital, succumbed to typhus fever which he acquired in the examination and treatment of Russian prisoners, of whom 800 are ill with typhus. In Jochmann, who was only 40, we have lost one of our most talented young internists, who was endowed with an extraordinary combination of preparatory training in bacteriology and clinical experience in the field of infectious diseases. He laid an especially thorough foundation for the study of disease as a pupil of Professor Strümpell at Breslau and of Lenhartz at Hamburg. In the Virchow Hospital, the infectious department of which is in combination with the Robert Koch Institute for Infectious Diseases, he had a splendid opportunity to extend his clinical experience and place it on a broad bacteriologic basis. He published the results of his investigations in numerous articles and addresses and further in contributions to various treatises. As the most mature fruit of his work a text-book on infectious diseases appeared a few weeks ago. This must be considered both from its contents as well as from its illustrations as the leading work in this field, at least in German literature. It must be regarded as an especial tragic circumstance that Jochmann himself died from an infectious disease, one almost wholly unknown in Germany, but now present in our country as a consequence of the war.

Another victim of the war is Professor Sprengel, the superintendent of the surgical department of the Ducal Hospital in Brunswick. He died from sepsis at the age of 62, having infected himself at an operation on a wounded soldier. Sprengel was an excellent practitioner and had published a large number of excellent monographs, particularly one on appendicitis. He was a collaborator on Deutsche Chirurgie and on the text-book of Kocher and de Quervain.

The Freiburg dermatologist, Professor Jakobi, died in the field as a result of disease. This scientist, who had reached the age of nearly 53, was an assistant of Neisser, and joined the faculty of Breslau in the department of skin diseases in 1890 and in 1895 was appointed professor extraordinary. In addition to numerous single treatises, he published an atlas of skin and venereal diseases and in connection with Neisser was the editor and publisher of *Iconographia dermatologica.*

IRON CROSSES FOR PHYSICIANS

To date, 2,700 physicians and surgeons have received this decoration for valor. It is moreover notable that the efforts of the leaders of the army to make the medical officers equal in rank with the regular army officers have found expression in the bestowal of the iron cross. While in the Franco-German War of 1870-71 the iron cross for physicians was awarded only to be worn on the ribbon provided for a noncombatant, in this war they receive it on a black and white ribbon, such as is given the fighting soldiers as a reward for gallantry.

TRANSPORTATION OF THE WOUNDED

While in the beginning the transportation of the wounded in our army was somewhat imperfect, on account of the extreme demands imposed on the medical service by the great battles of the immense army as well as on account of the preference which was given to the trains for troops and ammunition over the medical service, later and particularly in the last months complaints of such imperfections have ceased. This is essentially due to the better equipment of the hospital trains, which provide for a quicker and more suitable removal of the wounded from the seat of war to the base hospitals and especially to their home districts. In the equipment of the hospital trains, private persons and officials have competed, as in all other fields of social and military benevolence. Many cities and well-to-do persons have placed hospital trains of this sort at the disposal of the government. A few days ago, one of the most comfortable trains, fitted out by a member of the world-renowned banking house, Bleichröder, at an expense of $25,000 (100,000 marks) was placed in service and Professor Israel was put in charge. It is worthy of special recognition that Professor Israel, in spite of his 67 years, should undertake so difficult a service.

THE CONSERVATION OF FOOD SUPPLIES

The measures which the government has now taken to an increased extent to secure economy in the employment of foodstuffs, especially of grains and particularly of wheat are not to be taken as a sign of established need. Our supplies of foodstuffs are sufficient until the next harvest, and the present limitations on their use prescribed by the government may be regarded as a wise provision, a precaution taken at the right time. These precautions have, in fact, the purpose of preventing careless disregard to economy in the matter of nutrition but not to force an insufficient nutrition. On the other hand, it will be of advantage for the health of our people if the excessive consumption of meat, which has grown more and more as a result of our prosperity in the last few years, can be reduced to an intelligent moderation based on hygiene. The same is true, naturally, of the use of alcohol and other luxuries. People will learn how to get along with the restriction in the production of pastry which stands in close relation to the reduction of wheat flour. It appears likely that we shall not need to depend for our nutrition simply on our own agriculture but will be assisted directly or indirectly by the neutral states in spite of blockading (Einkreisungspolitik). Since Russia has raised the embargo on exportation of eggs for Sweden and Bulgaria for beans, cheese, lard and hogs, these foodstuffs no doubt will reach us.

Association News

THE SAN FRANCISCO SESSION

Chairmen of Subcommittees of Local Committee on Arrangements

The local Committee on Arrangements for the San Francisco session has appointed the following as chairmen of its several subcommittees:

Finance: J. Henry Barbat.

Hotels, Headquarters and Information: George B. Somers.

Halls and Section Meetings: W. P. Lucas.

Commercial Exhibits: R. E. Bering.

Entertainments and President's Reception: Emmet Rixford.

Section Entertainments: W. P. Lucas.

Press and Publicity: Sol Hyman.

Scientific Exhibits: William Ophüls.

Communications which naturally fall under one of these divisions should be addressed to the chairman of the appropriate committee at 916 Butler Building, San Francisco.

Additional Special Trains[1]

THE AMERICAN MEDICAL DIRECT ROUTE SPECIAL

This train is routed over the Chicago and Northwestern Railroad, Union Pacific and Southern Pacific, and the schedule noted below is arranged with a view of making the trip between Chicago and San Francisco in as short a time as is practical. The following schedule is announced:

Lv. Chicago	Friday	June 18,	5:30 p. m.	C. & N. W. Ry.
Ar. Omaha	Saturday	June 19,	6:00 a. m.	C. & N. W. Ry.
Lv. Omaha	Saturday	June 19,	6:30 a. m.	U. P. Ry.
Ar. Ogden	Sunday	June 20,	9:10 a. m. (M.T.)	U. P. Ry.
Lv. Ogden	Sunday	June 20,	11:30 a. m. (P. T.)	S. P. Co.
Ar. San Francisco	Monday	June 21,	11:00 a. m.	

Leaving Chicago Friday, June 18, via the Chicago and Northwestern Railway, the line west and northwest of Chicago which, with its connections, the Union Pacific and Southern Pacific, formed the first transcontinental line, the route traverses the northern part of Illinois, crossing the Mississippi River at Clinton, Iowa, and passes through the central portion of Iowa, a region noted for its productive farms and rich dairies. The Missouri River is crossed at Omaha, early on the morning of June 19. From this city, the route closely follows the old overland stage trail to Ogden, Utah, a distance of about 1,000 miles. This historic wagon road was the pioneer overland route before the building of the railway. Following the Platte River Valley, the road gradually reaches a higher altitude. Shortly after leaving Cheyenne, Wyo., the train passes through Sherman, the highest point on the route. Between Sherman and Ogden, the interest of the traveler will be centered on Green River, Rock Springs, Evanston, Echo and Weber Canyons. The train is scheduled to arrive at Ogden at 9:10 a. m., Sunday, June 20, Mountain Time, and will leave at 11:30 a. m. Pacific Time, by way of the Southern Pacific. The roadway is directly across the Great Salt Lake over the "Great Salt Lake Cut-Off," so that travelers enjoy the novelty of "going to sea by rail," since for 30 miles the train crosses the lake.

Through Nevada and California, the train passes such historic places as Donner Lake, Emigrant Gap, Blue Canyon, American River, Sacramento and Benicia, and is scheduled to reach San Francisco on Monday morning, June 21, at 11:30.

This Direct Route Special train is scheduled to make the run between Chicago and San Francisco in sixty-five and one-half hours.

THE AMERICAN MEDICAL GRAND CANYON ROUTE SPECIAL

The American Medical Grand Canyon Route Special is scheduled to leave Chicago, June 13, via the Santa Fe, and to permit visits to the Grand Canyon and the Panama California Exposition at San Diego en route. The entire day of June 16 will be spent at Grand Canyon, Arizona, and the day of June 18 at San Diego, arriving in San Francisco Monday morning, June 21, at 9:40. An additional fare of $7.50 is charged for the Grand Canyon side trip. The Pullman rates for lower berth are $5 more than the rate for direct routes without stopover.

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[1] Other special trains to San Francisco were announced in The Journal, Feb. 6, 1915, p. 527; rates in the issue for Jan. 30, 1915, p. 457.

Following is the schedule:

June 13—Leave	Chicago	8:05 p. m.
June 14—Arrive	Kansas City	8:45 a. m.
June 14—Leave	Kansas City	9:00 a. m.
June 14—Arrive	La Junta	10:45 p. m.
June 15—Arrive	Albuquerque	11:00 a. m.
June 16—Arrive	Grand Canyon	6:50 a. m.
June 16—Leave	Grand Canyon	7:40 p. m.
June 17—Arrive	Los Angeles	2:40 p. m.
June 17—Arrive	San Diego	6:30 p. m.
June 19—Leave	San Diego	8:40 a. m.
June 19—Arrive	Los Angeles	12:50 p. m.
June 20—Leave	Los Angeles	5:00 p. m.
June 21—Arrive	San Francisco	9:40 a. m.

The route followed is along the historic old Santa Fe trail. As will be noted, the train leaves Chicago at night, reaching Kansas City early the next morning. The next day the train passes through Kansas, late in the afternoon of June 14 reaching Colorado, and then through Trinidad and across Raton Pass during the night. Early the next morning, June 15, it will be in the adobe land, the territory of the Mexican and Pueblo Indians. It is interesting to note the development of the country which has resulted from the conservation of the water supply, and similar agricultural developments. The Glorieta Range is crossed at an elevation of 7,453 feet. Here, Starvation Peak, and the old Pecos Church are of interest. Further south is Albuquerque on the Rio Grande, which point should be reached at 11 in the morning of June 15. Here, a stop of half an hour will be made, permitting a visit to the Indian museum on the station grounds. Immediately after leaving Albuquerque, the uphill climb to the Continental Divide begins, and the Indian village Isleta is passed. This settlement was an old one when Coronado visited it in 1540. During the afternoon the train passes through the black lava flows and huge red cliffs. The morning of June 16 will find the train parked on the brink of the Grand Canyon of the Colorado. The entire day will be available for trips along the rim of the Canyon, or for going down the Bright Angel Trail. The train leaves Grand Canyon at 7:40 p. m. From this point, it is practically down hill all the way to the eastern boundary of California, where the Colorado River is crossed at Needles. By daylight on June 17, the train will be in the Mojave Desert. About noon, it will pass down the slopes of Cajon Pass across fertile acres of fruits and flowers, and is due to reach Los Angeles at 2:40 in the afternoon. The special will not stop at Los Angeles but will go through to San Diego. The journey from Los Angeles to San Diego is through orange, olive and walnut groves, passing beautiful little cities and the San Juan Capistrano Mission, perhaps the most picturesque of all the old missions. Then for many miles the road skirts the Pacific, and the train should reach San Diego at 6:30 in the evening. The famous Hotel del Coronado is just across the bay. The entire day, June 18, is given to seeing San Diego and the Panama California Exposition. Leaving San Diego at 8:40 a. m., June 19, the train will return to Los Angeles, reaching that city at 12:50 p. m. Here the train will be parked at the Santa Fe station until 5 o'clock of the afternoon of June 20, when the special will leave for San Francisco, arriving at 9:40 Monday morning, June 21.

Morbidity Reports.—Morbidity reports when recorded over a period of time and properly compiled become a record of the past occurrence of disease. They show the relative prevalence of disease from year to year and under varying conditions. They show the effect of the introduction of public health measures and of sanitary works. They give a history of disease not obtainable in their absence.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914.

Marriages

Amy Bell Rohrer, M.D., and Rev. August Frederick Albert Neudoerffer, at Rajahmundry, Madras Presidency, India, Dec. 3, 1914.

Philip Newton, M.D., Washington, D. C., to Princess Helene Schaholfskaya of Kiev, Russia, at Petrograd, Russia, recently.

Captain Ernest Robert Gentry, M. C., U. S. A., to Miss Lydia Fuller, at Fort Leavenworth, Kan., February 6.

Mark Delimon Stevenson, M.D., Akron, Ohio, to Miss Martha von Norelly of Vienna, Austria, January 29.

Leonard Pratt Daws, M.D., Juneau, Alaska, to Miss Effie Lenore Buzard of Albany, Mo., Dec. 30, 1914.

Rachel Buchanan McMaster, M.D., and Rev. Samuel Hutson Hay, at Winnsboro, S. C., Dec. 29, 1914.

Ray Samuel Friedby, M.D., Akron, Ohio, to Miss Mary Emily Thomas of Delaware, Ohio, Dec. 31, 1914.

William Albert Dearman, M.D., to Miss Stella Wright Gates, both of Long Beach, Miss., Oct. 28, 1914.

Robert Holbrook Smith, M.D., Akron, Ohio, to Miss Anna Robinson Finley of Oak Park, Ill., January 25.

August Herman Meise, M.D., to Miss Alice Grace O'Hara, both of New York City, Oct. 27, 1914.

James Samson, M.D., to Miss Lillian Baines, both of Detroit, Dec. 5, 1914.

Deaths

Surgeon Carl DeWolf Brownell, M.D., Lieutenant Commander, U. S. Navy (retired). New York University, New York City, 1888; a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States; who was placed on the retired list, Jan. 20, 1914, on account of disability resulting from an incident of the service; died at his home in Providence, R. I., January 28, aged 48.

William P. Keasby, M.D. New York University, New York City, 1888; formerly of Perth Amboy, N. J.; later a druggist in Hollywood, Cal., and a resident of Los Angeles; a patient in the California Hospital of that city; died in that institution, January 20, as the result of an incised wound of both arms, self-inflicted, it is believed, with suicidal intent while despondent on account of ill health.

Aaron Ivins Comfort, M.D. University of Pennsylvania, Philadelphia, 1860; surgeon of volunteers during the Civil War; a Fellow of the American Medical Association; for twenty-three years surgeon at the National Soldiers' Home, National Home, near Milwaukee, Wis.; died in that institution, January 31, four days after a fall, in which he sustained a fracture of the hip, aged 89.

Daniel C. Noble, M.D. New York Homeopathic Medical College, 1892; of Middlebury, Vt.; for ten years health officer of that city and for a long time a member of the board of trustees of the Vermont Sanatorium, Pittsford; from 1908 to 1910 surgeon-general of Vermont; died in the Hayes Sanatorium, Burlington, Vt., January 18, aged 52.

Robert S. Bennett, M.D. Kansas City (Mo.) Medical College, 1877; a Fellow of the American Medical Association; formerly surgeon of the Kansas City Southern Railway, at Drexel, Mo., but for the last four months under medical treatment in Kansas City; died in his apartment in Kansas City, January 24, aged 53.

Albert Bledsoe Wayland, M.D. University of Virginia, Charlottesville, 1897; a Fellow of the American Medical Association and a well-known practitioner of Albemarle County, Va., but for a year a resident of San Antonio, Tex., on account of his health; died at his home in Crozet, Va., January 25, aged 40.

D. Morris Thurston, M.D. Cincinnati College of Medicine and Surgery, 1875; a member of the State Medical Association of Texas; surgeon at Beeville, Tex., for the San Antonio and Aransas Pass and Southern Pacific systems; died in a sanatorium in San Antonio, Tex., January 25, aged 62.

George W. Gray (license, Minnesota Exemption Certificate, 1883), a member of the Minnesota State Medical Association; formerly of Brownsdale and Austin, Minn.; died recently at his home in Minneapolis, aged 61.

Silas Hall, M.D. Physio-Medical Institute, Cincinnati, 1875; Columbus (Ohio) Medical College, 1891; formerly a member of the Indiana State Medical Association and a practitioner of Vincennes; died in the Woodmere Hospital, Evansville, Ind., Oct. 29, 1914, from nephritis, aged 65.

Ernest Wesley Russell, M.D. University of Vermont, Burlington, 1879; a Fellow of the American Medical Association and a member of the surgical staff of St. Mary's General Hospital, Lewiston, Maine; died at his home in that city, January 27, from cerebral hemorrhage, aged 56.

Thomas F. Keen, M.D. University of Maryland, Baltimore, 1881; formerly a member of the Medical Society of Virginia; president of the Hamilton (Va.) Bank; one of the most widely known practitioners of northern Virginia; died at his home in Hamilton, January 24, aged 57.

William Layton, M.D. University of Louisville, 1868; of St. Louis; first assistant physician at the Eastern Kentucky State Hospital, Lexington, for several years; died in Webster Groves, Mo., Dec. 9, 1914, from the effects of an accidental fall from a second story window, aged 78.

George S. Courtright, M.D. Medical College of Ohio, Cincinnati, 1862; Miami Medical College, Cincinnati, 1868; a Fellow of the American Medical Association; surgeon of volunteers during the Civil War; died at his home in Lithopolis, Ohio, January 19, aged 74.

Harry Clifton Boutelle, M.D. Harvard Medical School, 1899; a Fellow of the American Medical Association; a member of the Board of Health of Danvers, Mass., and physician to the public schools of that city; died at his home, January 26, from pneumonia, aged 39.

Isham Henry Clayton Cook, M.D. Louisville (Ky.) Medical College, 1875; formerly a member of the Mississippi State Medical Association and vice-president of the Forrest County Medical Society; died at his home in Hattiesburg, Miss., January 22, aged 61.

Arthur Field Hinman, M.D. Syracuse (N. Y.) University, 1910; later intern in the St. Joseph Hospital, Syracuse, and thereafter a practitioner of Auburn, N. Y.; died at the home of his parents in Clyde, N. Y., from carcinoma of the intestines, aged 31.

Adolphus E. Chamberlain, M.D. Hahnemann Medical College, Chicago, 1881; of Yuma, Mich.; died at his home in that place, January 9, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, aged 56.

Aurelius Martin, M.D. University of Louisville, Ky., 1881; a member of the Mississippi State Medical Association and once president of the Granada County Medical Society; died at his home in Hardy Station, Miss., January 23, aged 56.

Francis Marion Flinn, M.D. St. Louis College of Physicians and Surgeons, 1895; formerly a medical officer of the Montana National Guard, and later of Deeth, Nev.; died at his home in Molta, Mont., January 15, from nephritis, aged 53.

George Grosline Rutledge, M.D. Starling Medical College, Columbus, Ohio, 1886; of Owensville, Ohio; a member of the Ohio State Medical Association; died suddenly, January 22, from heart disease, while making a professional call, aged 52.

James Rea Crawford, M.D. University of Pennsylvania, Philadelphia, 1899; a member of the staff of the Polyclinic Hospital, Philadelphia; died suddenly from heart disease in his room in that institution, January 15, aged 40.

Samuel W. Gibson (license, Virginia), surgeon in the Confederate Service during the Civil War and for more than forty years a practitioner of Russell County, Va.; died at his home in Castlewood, Va., January 17, aged 89.

Théophile Gonaux, M.D. Tulane University, New Orleans, 1885; for several years physician to the French Society, New Orleans; died at his home in that city, January 15, aged 64.

Malcolm James Farrish, M.D. Trinity Medical College, Toronto, Ont., 1891; died at his home in Sherburn, Minn., January 22, from tuberculosis, aged 50.

Harrison V. Appley, M.D. Philadelphia University of Medicine and Surgery, 1877; died at his home in Grand Rapids, Mich., January 21, aged 62.

Cornelius F. Yeager, M.D. College of Physicians and Surgeons, Baltimore, 1884; died at his home in Mineral Wells, Tex., January 19, aged 67.

John Weir Wiestling, M.D. University of Pennsylvania, Philadelphia, 1866; died at his home in Vandalia, Ill., January 19, from dropsy, aged 72.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

CELERINA, ALETRIS CORDIAL AND KENNEDY'S PINUS CANADENSIS, LIGHT AND DARK

Report of the Council on Pharmacy and Chemistry

The following reports on products of the Rio Chemical Company have been submitted by a referee. The Council recommends that they be published, as the preparations discussed are glaring instances of nostrums exploited through physicians on unscientific claims and false representations.

W. A. Puckner, Secretary.

Celerina

Celerina belongs to what Samuel Hopkins Adams calls the "bracer" type of nostrum. According to the label it contains 42 per cent. alcohol (whisky contains about 50 per cent.). The other ingredients of Celerina are declared to be as follows:

> "Each fluidounce represents Forty grains each Kola, Viburnum, Forty-eight grains Celery, Twenty grains Cypripedium, Sixteen grains Xanthoxylum and Aromatics.
>
> "Dose—1 or 2 teaspoonfuls 3 times a day."

Kola contains a very small percentage each of caffein and theobromin. It is impossible for the infinitesimal amounts of these alkaloids in an ordinary dose of Celerina to produce any physiologic effect.

Viburnum has been called a "uterine sedative," whatever that may be. Its only real activity is the psychic one due to its taste and odor.

Celery at one time was credited with being both an antispasmodic and a nerve stimulant—a remarkable combination of opposing qualities! Scientific investigation has failed to show that celery has any physiologic or therapeutic activities. If it had the slightest medicinal value, the rational course would be to prescribe it in its fresh and natural state. The small dose contained in a teaspoonful of Celerina is inappreciable and not even equivalent to that contained in a stalk of celery.

Ladyslipper, more imposing under the Latin name of "cypripedium," is a flowering plant with a legendary reputation as an "antispasmodic and nerve stimulant." It has been in the therapeutic scrap-heap for years. It contains a little tannic acid, gallic acid and a volatile oil. Even a tannic acid action cannot be expected from a teaspoonful of a preparation containing 20 grains of ladyslipper to the ounce.

Prickly ash (xanthoxylum) has never been shown to have any activity other than that of a local irritant, especially to mucous membranes. The slight "bite" from this drug would be entirely covered up by the alcohol in Celerina. Any stimulating effect which this drug may have on the stomach is greatly inferior to that produced by a very small glass of ordinary ginger ale.

In short, there is no ingredient in Celerina, except the alcohol, that has any recognizable activity; and the alcohol content is nearly as great as that of ordinary whisky. Some of the claims and recommendations for this nostrum are:

> "Celerina (Nerve Tonic), for Nervousness, Hysteria, Insomnia, Nervous Indigestion, Languid and Debilitated Conditions, Recovery from Alcoholic Excess."

Think of prescribing an alcoholic nostrum four times a day to promote recovery from alcoholic excess!

> "NEURASTHENIA: The bane of the general practitioner; the puzzle of the neurologist; the juicy fruit of the quack and faddist; the opportunity of the intelligent therapist. . . . For the medical treatment CELERINA is the preparation of wide utility."

The *sang froid* with which the exploiters of this nostrum refer to other "quacks and faddists" as reaping "juicy fruit" from neurasthenics would command admiration were it not so pitiful.

> "Celerina has substantial endorsement in nervous disorders characterized by Aphonia (nervous)."

Of course, the disappearance of nervous aphonia might follow the application of any treatment whatever, be it Eddyism, Chiropractic, Peruna or Celerina.

> "CLIMACTERIC (the Menopause) flattering results have been reported from a combination of equal parts Celerina and Aletris Cordial Rio."
>
> "Teaspoonful doses after meals and upon retiring have proven efficacious [in "dyspepsia"] when other remedies have failed."

Here is a good example of proprietary-house therapeutics: Such widely different conditions as digestive trouble and the climacteric are to be treated with a combination of alcohol, simple bitters and aromatics! Why not order a cocktail under its own name? It would be equally efficacious, less mysterious and its dangers might be better realized!

> "*A teaspoonful or two in three tablespoonfuls of boiling hot water [for insomnia] upon retiring.*"

Any other hot toddy at bedtime (and it need *not* cost a dollar a bottle) might give relief; but the intelligent physician to-day recognizes the danger of prescribing alcohol in such conditions.

> "In the case of brain workers who suffer from *nervous excitability* and mental fatigue, the administration of Celerina in teaspoonful doses, three times a day and at bedtime, rapidly controls the condition and increases *mental* capacity."

And the same effect follows its use:

> "In cases involving worry, anxiety, overwork, and excesses of *various* kinds. . . ."

Moreover:

> "*Celerina* is the most prompt and efficient of remedies for devitalized or broken-down *constitutions*—doses four times a day."

The statement made by its manufacturers that this preparation is free from narcotics or habit-forming drugs is not true. Alcohol is both a narcotic and a habit-forming drug.

As in the case of other nostrums containing no potent drugs but alcohol, Celerina is recommended for various diseased conditions in combination with a familiar form of treatment by drugs of more or less value. The physician who thoughtlessly prescribes one of these combinations will without doubt unthinkingly attribute any subsequent improvement to the Celerina. Thus, for malaria, a prescription of quinin and Celerina is advised; for chorea in children, arsenic with Celerina; in "Convalescence from La Grippe," strychnin sulphate, Fowler's solution, and Celerina; for impotence, nux vomica, dilute phosphoric acid and Celerina. In none of these conditions would Celerina affect favorably anything except the pockets of the exploiters; in some, as in the chorea of children, the alcohol would be positively detrimental. Of course, the value of such prescriptions (so far as they have any apart from the fictitious value lent by the alcohol) resides altogether in the standard drugs prescribed with Celerina.

There is no possible excuse for writing a prescription for Celerina, either in original package or mixed with well-known or valuable drugs. The sooner it is realized that this preparation has no place in medicine, should never be prescribed by physicians and is essentially nothing but alcohol and bitters exploited under a fancy name, the better for the public health and the science of medicine. The continued sale and use of Celerina is a disgrace to the medical profession.

Aletris Cordial

Aletris Cordial is a nostrum containing therapeutically worthless drugs in alcohol (28 per cent.).

The "formula" on the label reads:

> "Each fluidounce represents ten grains Aletris, thirty grains Helonias and thirty grains Scrophularia."

At one time these drugs had some vogue, chiefly as domestic remedies. They have been discarded as valueless by modern scientific medicine.

Aletris, or unicorn root (Aletris farinosa), contains a bitter principle and starch. The remarkable uterine tonic properties formerly ascribed to it have not been confirmed by reliable observers. It is practically worthless.

Helonias, or false unicorn (Chamaelirium luteum), is asserted to be a hemostatic and uterine tonic. No trustworthy evidence has ever been offered in support of the claims made for this drug; reliable medical literature contains no reference to it; it has no valid claim on the attention of physicians.

Scrophularia, or figwort (Scrophularia marilandica), contains a principle which has a digitalis-like action on the heart. Its activity is so slight in comparison with that of digitalis, however, that there was nothing to be gained by studying it. The drug is consequently little known and is not mentioned in critical works on pharmacology. If the drug were therapeutically active in the quantities used, another danger would be added to that of the alcohol content of Aletris Cordial. Since the recommended dose (a teaspoonful) contains, if the formula be correct, only about 4 grains of figwort, this drug too may be regarded as practically inert in this preparation.

Not one of these drugs has been deemed worthy of mention in the Pharmacopeia. The Council has previously discussed them and declared them valueless (Reports Council Pharm. and Chem., 1909, p. 146; 1910, p. 10; 1912, p. 42).

In Aletris Cordial, then, there is no ingredient capable of producing any other effect than the alcohol stimulation and such psychic effect as may be due to the bitter taste. Yet physicians are asked to believe that

> "Probably no remedy is so uniformly successful in the prevention of threatened miscarriage as ALETRIS CORDIAL Rio."
>
> "HABITUAL MISCARRIAGE can be effectually overcome by the systematic use of *Aletris Cordial Rio.*"
>
> ". . . regulates the local *circulation* and imparts normal tone and strength to the uterine muscle."
>
> "The use of Aletris Cordial Rio throughout pregnancy goes far to assure normal, uncomplicated labor."

Such claims as these, when made for a mixture containing no therapeutically active constituent except alcohol, are absolutely preposterous. It should be noted that the declared alcohol content of Aletris Cordial is much higher than that of the strongest wines, and, in the light of medical experience, quite high enough to promote the formation of the alcohol habit in a steady user. The following recommendation, taken from the company's "Budding into Womanhood" circular, therefore, is outrageous:

> "Many medical practitioners recommend to mothers the use of Aletris Cordial Rio for their growing daughters, ranging in age from twelve to eighteen years. . . ."

It is to be hoped that no medical practitioner is so heedless of consequences as to prescribe for adolescent girls a worthless nostrum capable of creating a craving for alcohol. The temperance societies might with profit take steps to inform laymen, especially women, concerning the worthlessness of this nostrum, the risk involved in taking it, and the outrageous character of the recommendations made for it by the manufacturers.

Kennedy's Pinus Canadensis, Light and Dark (Abican and Darpin)

Kennedy's Pinus Canadensis, Light (recently renamed "Abican") and Dark (renamed "Darpin") are also exploited by the Rio Chemical Company. Although they have been on the market some thirty or forty years they appear to have achieved no marked degree of commercial success. Yet they have been imitated by most of the pharmaceutic houses. They are of interest chiefly through the barefaced fraud involved in their exploitation.

COMPOSITION CLAIMED

Apparently the dark preparation ("Darpin") was first put on the market; then the light one ("Abican") was offered, to be used only "as an injection and externally." The reason for the existence of the light preparation evidently was the objectionable property of the dark, which stained linen. The two preparations are both said to be extracts of Pinus Canadensis or hemlock bark. A circular issued some years ago contained the following statement:

> "Pinus Can. (Ken.)—*Dark*—A non-alcoholic extract of Pinus Canadensis, to each fluidounce of which is added 0.48 grains Thymol.
> "Pinus Can. (Ken.)—*Light*—A non-alcoholic extract of Pinus Canadensis, to each fluidounce of which is added 24 grains each of pure Alum Potash and Sulphate of Zinc and 0.48 grains of Thymol."

The labels on the packages of the light and dark preparations sent out to-day bear, respectively, only the following references to composition, the first on the dark and the second on the light:

> "Each fluidounce also contains 0.48 grains Thymol."
> "A non-alcoholic preparation of Pinus Canadensis, to which is added twenty-four grains each pure alum potash and sulphate of zinc and 0.48 grains thymol to the fluidounce."

ACTUAL COMPOSITION

"Darpin" or Kennedy's Pinus Canadensis, Dark, does contain tannin, but, as the simplest of chemical tests demonstrate, Pinus Canadensis, Light, does not contain tannin. It might as truthfully be called maple syrup or beef tea.

It is almost a work of supererogation to discuss the therapeutic claims made for preparations sold under false pretenses as to composition. It is enough to mention that Kennedy's Pinus Canadensis, Dark or Light, is recommended in

ALBUMINURIA
DIARRHEA-DYSENTERY
FETID PERSPIRATION
ENDOMETRITIS
FISSURES
FISTULA
GONORRHEA
HEMORRHAGE FROM THE NOSE
UTERINE HEMORRHAGE
LEUCORRHEA
NASAL AND PHARYNGEAL CATARRH
PILES
SORE THROAT
ULCERATION OF THE CERVIX

The intelligent physician of to-day knows that his forefathers in the days of the stage-coach employed tannic acid in its crude form and treated intestinal disease in a very unsatisfactory manner; he knows, further, that advances in our knowledge of pathology have rendered the use of tannic acid in gastro-intestinal therapeutics largely unnecessary and that when it is used it should be in some form that will pass the stomach unchanged. So far as its use as local application is concerned, he knows, without need of instruction from the Rio Chemical Company, when tannin is indicated, and the Pharmacopeia furnishes a suitable preparation for the physician so that he need not resort to an unscientific nostrum like Darpin.

The physician who is competent to treat a case of gonorrhea does not need to be told that alum and zinc sulphate may be useful in such conditions, and he does not want them palmed off on him for something else under the name of Pinus Canadensis, Light, Abican or what not. Also, he prefers to use them when they are needed singly and in strength suited to the conditions of the individual case.

[EDITORIAL COMMENT.—Celerina, Aletris Cordial and Kennedy's Pinus Canadensis, Light and Dark, appear to be the entire output of the Rio Chemical Company, which was one of the earliest of the various companies organized by James J. Lawrence of *Medical Brief* fame. The business was moved from St. Louis to New York City in 1901. According to what we believe to be reliable information, the Rio Chemical Company is now composed of James P. Dawson, president; William W. Conley, vice-president and treasurer; and E. D. Pinkerton, secretary. These also constitute the directors. It appears that James P. Dawson is a member of the law firm of Dawson and Garven, St. Louis; E. D. Pinkerton is said to be Miss Effie D. Pinkerton, stenographer for Dawson and Garven. We know little concerning William W. Conley except that he appears to be in charge of the establishment in New York. We find no evidence that he is either a chemist or a pharmacist; his name does not appear in the membership list of the American Chemical Society or of the American Pharmaceutical Association, nor can we discover that he has published anything in the way of chemistry or pharmacy. As a matter of fact, the Rio Chemical Company is another of the pseudo-chemical companies created to exploit one or more proprietaries—in this instance Celerina, Aletris Cordial and Pinus Canadensis. The following medical journals carry advertisements of the Rio products, (or did late in 1914): *American Journal of Surgery, American Medicine, Denver Medical Times and Utah Medical Journal, Eclectic Medical Journal, International Journal of Surgery, Interstate Medical Journal, Massachusetts Medical Journal, Medical Brief, Medical Century, Medical Council, Medical Review of Reviews, Medical Sentinel, Medical Standard, Texas Medical Journal* and *Woman's Medical Journal*.]

Correspondence

U. S. Public Health Service Report on a Tuberculosis Treatment

To the Editor:—In reply to your editorial (THE JOURNAL, Jan. 23, 1915, p. 347), I wish to discuss the experimental work of my methods, as recorded in Dr. Stimson's report, in almost every paragraph of which I find serious misstatements, important omissions and disregards of specific instructions which, when corrected, will show the justice of my general objection that the report is unfair and misleading and that the investigation itself was conducted in such a manner that the failure of the experiments was inevitable. I wish to state that I am prepared to supply documentary and other evidence for every assertion I shall make.

1. Dr. Stimson stated to me on his first arrival that he had no practical experience in the work contemplated. He never even suggested to conduct his work independently or without my general supervision; on the contrary, he stated that his object and purpose would be attained if he were given an opportunity to make the infections and autopsies on animals which I considered resistant, and with serums which I considered germicidal, regardless of whether or not he succeeded in applying certain tests which served me as guides for the purpose of avoiding failures. On or about Oct. 4, 1913, Dr. Stimson changed his attitude and proposed "independent" work in the sense that this was to be secret, by excluding me from all knowledge of its conduct. This I promptly refused, not because I lacked confidence in my methods but because I had reason, under the circumstances, to lack confidence in the investigator.

2. Dr. Stimson's statement that he used an entirely fresh preparation of my vaccine in his experiments is not in accordance with his personal knowledge or with that of his superior officers.

The facts are that the vaccine which he used was supplied by me for comparative chemical studies, together with a letter to Dr. Anderson, expressly forbidding its official use, for reasons stated, namely, that it was not entirely fresh and had not been tested for its efficiency. I withdrew my consent to its use for any purpose whatever, a few days later, in a letter to Surgeon-General Blue, for good and sufficient reasons.

No vaccine or serum was supplied by me thereafter until May, 1914. The vaccine which I supplied then, we sent on the condition (because likewise not entirely fresh) that no report should be made on results obtained with it, provided that I supplied an entirely fresh and, in my opinion, superior preparation as soon as this could be finished, namely, within six months from April 24, 1914. This agreement was sanctioned by Assistant Secretary of the Treasury Hon. Byron R. Newton, and is in my possession bearing his signature.

I did supply the entirely fresh specimen of vaccine within the time stated. Neither this nor the specimen of May, 1914, was used, and the report was made prematurely and in violation of the agreement.

3. According to printed directions supplied by me for the use of the partly fresh vaccine, the animals treated with the older specimen of October, 1913, were insufficiently treated, and were infected with ten times the prescribed quantity of virulent tubercle bacilli.

4. The serums used by Dr. Stimson prior to May 15, 1914, were neither supplied nor tested by me. They were apparently removed, secretly and without my knowledge and consent, from my laboratory.

5. The serums used by Dr. Stimson on May 15 were six days old on that date. My directions conditioned the need of entirely fresh serums and the content of certain maximal amounts of specific antibodies, which were not found in sufficient quantities when we made our own tests. Dr. Anderson was promptly informed of this and, to give him the opportunity of making experiments with fresh serums, I offered to have persons living in Washington, who had been vaccinated by us, call at the Hygienic Laboratory to be bled. He did not avail himself of this offer. Numerous other specimens of serums, some of them closely approximating the necessary content of specific antibodies, were afterward sent, but were not used in the experiments on which Dr. Stimson reports.

Without further comment I submit the foregoing facts as bearing directly on the experiments on which Dr. Stimson formulated his conclusions.

As to the reference, at the end of the editorial article, to the suspicions which Dr. Stimson directs against our personal integrity and honesty, these would have been ignored entirely by me, as a matter beneath my dignity to defend; but, since they impressed the editor, I will state that the correctness of certain records was a matter of dispute between the chief of my laboratory and Dr. Stimson. The latter having called my attention to them (which, by the way, did not in any manner concern him), I made a personal examination, accepted the records as correct, and myself directed the entry in the record book on the day following, to complete the records, from memoranda and personal statements by the chief of the laboratory, after his being fully corroborated by an assistant who had aided in the work. Dr. Stimson's objections were based on inferences only.

The following papers now in course of preparation, and bearing on the subject, will appear in the near future: "A Critical Examination of Dr. Stimson's Report," "Further Experimental and Other Studies on Prophylactic and Therapeutic Immunization in Tuberculosis," "The Results of a Collective Inquiry on the Practical Use of My Vaccine, by Several Hundred Independent Observers," "Pseudo-Tuberculosis in Guinea Pigs, and Its Relation to Failures in Tuberculosis Experiments." We also expect reprints on the experimental results obtained with the vaccine and with serums from vaccinated persons, in the laboratory of Sir Almroth E. Wright, as soon as the report has been published in London. To any physician interested and requesting it, one or all of them will be mailed.

Karl von Ruck, M.D., Asheville, N. C.

[The foregoing letter was referred to the Surgeon-General of the U. S. Public Health Service. The following is the reply:]

Washington, Feb. 2, 1915.

To the Editor:—Your letter to Surgeon-General Blue, U. S. Public Health Service, enclosing one from Dr. von Ruck which is to be published in The Journal, has been referred to me for comment. Dr. von Ruck's letter contains serious charges against me, and I appreciate your courtesy in permitting an opportunity for reply. I am under a disadvantage in two particulars: first, that my report[1] on the von Ruck methods had only the limited distribution of a Senate document and is not available to most of those who will read the criticism of it, and second, that in this limited space I shall have difficulty in presenting adequately all the facts concerning von Ruck. The service has on file letters from him which, if they could be published *in toto*, would show to any reader the unscientific attitude of Dr. von Ruck, and trace his evasions and contradictions, and the obstacles which he threw in the way of the investigation, dating from the time when he ascertained that it was to be a sincere and impartial effort to ascertain the truth, and not a mere admiring inspection, as it were, over his shoulder.

Taking up his letter in detail, I deny first of all that there are any misstatements or important omissions in the report. The only "disregards" of specific instructions were of his instructions which were given with a view of frustrating the investigation, or of delaying it until the same influence which brought about the investigation could be importuned to abolish it. I had no motive for animosity toward Dr. von Ruck, and should have been only too glad to have assisted in indorsing his methods, which, if his claims had been true, would have been of undoubted value to mankind. Unfortunately he was unable to substantiate his claims, and I should have failed in my duty as a public servant, had I not made this clear in my report. I shall now refer to his criticisms seriatim.

1. My statement to Dr. von Ruck regarding my lack of experience in the line of work contemplated has been abbreviated by him so as to give the impression that I had admitted my incompetence to undertake the investigation. I told him that I was familiar with the theory and practice of procedures in serology, which he had applied by methods of his own (in reality of his assistant's) devising, to the study of tuberculosis, but that I was naturally unversed in his application of them. So is every one else outside of his laboratory. His methods are peculiarly his own, and peculiarly unreliable.

Never from the beginning of the investigation did I contemplate anything but an independent investigation, and if I failed to make this clear at the outset, it was because I assumed that he was a scientist and would ask for no other kind. His phrase "a sympathetic investigation" was not then familiar to me. I outlined my proposed course to him as follows: to remain at his laboratory long enough to acquire familiarity with his methods and results, and then to transfer the work to Washington, where the facilities were incomparably better. When he had been forced by concrete examples to the confession that his serologic methods were defective, I agreed that, after all, the outcome of virulent inoculation constituted the supreme test of whether an animal was immune to tuberculosis or not. Obviously I welcomed his offer to certify on the basis of his tests that a given animal was immune, and then turn the animal over to me for the final test of immunity. This offer he has never made good in spite of repeated requests. He later stated that he did not wish to do this because he wanted to have the opportunity of seeing the inoculations made, of knowing what cultures and amounts were used, and of seeing the results and autopsies. This attitude of unwillingness to permit a single detail of the investigation to transpire without his personal supervision he vigorously maintained at a conference with Dr. Anderson and myself, and I leave this fact to the judgment of scientific workers, for appraisal as to its bearing on his scientific standing. Later, when the demands of the service for some tangible evidence of the immunizing properties of his vaccine became more peremptory, he pleaded his inability to comply because all the animals he was able to obtain suffered from tuberculosis or pseudotuberculosis, which rendered them insusceptible of immunization. How then will he presume to immunize human beings, who are mostly infected at some period with tuberculosis? He calls on us to assume parallelism between the action of the vaccine in persons and guinea pigs. I excluded Dr. von Ruck and his assistants from all knowledge of my work (as far as I was able) only after it became clear to me that there were persons in his staff who were capable of falsifying records of his alleged scientific experiments.

2. The vaccine referred to by me as "an entirely new batch" I had observed in various stages of its manufacture. It was represented to me as such, and Dr. von Ruck refers to it in a letter of Oct. 11, 1914, as follows: "I am sending you 50 c.c. of the old vaccine made in 1911, and 50 c.c. of the new vaccine made last month." He used this vaccine in the treatment of human beings. I still believe it to have been a completely new batch of vaccine, and that Dr. von Ruck's objections are but a subterfuge to excuse an inefficient

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[1] This report is contained in Senate Document 641, 63rd Congress, 3rd Session. It may be obtained by applying to the Chairman, Senate Committee on Public Health and Quarantine.

preparation. At any rate it was the best he was able to prepare and was therefore the legitimate subject of investigation. His attempted limitation of this product to chemical studies was made by letter after the vaccine had been turned over to us for animal experimentation. The central question of this investigation is whether or not the preparations used by him on patients at the time of it conform to his claims, and not whether in the course of many attempts covering months or years he may be able to produce one which will do so.

We did not attempt to immunize animals with the vaccine sent us in May, 1914, because Dr. von Ruck had finally agreed to send us animals which he himself was to immunize with it. To overcome his difficulty with diseased animals, we sent him a shipment of guinea-pigs from our own healthy stock, which, however, he reported later had by accident been mixed with other animals, and found subsequently to be diseased.

That Dr. von Ruck could have no just basis for his claim of superiority for the vaccine supplied Oct. 24, 1914, is shown by his own words under date of October 3, "There is now no chance of finishing a satisfactory preparation of vaccine in the near future, and certainly not by the 23d of this month, the date when the limit of six months, set by the Hon. Mr. Newton, Assistant Secretary of the Treasury, expires." Nevertheless he did furnish vaccine by that date which he stated he believed to be superior to the vaccine previously supplied to the department. Since testing a vaccine by Dr. von Ruck's methods requires months of animal experimentation before its assumed potency can be determined, he could not possibly have such data for a vaccine just prepared. The assistant secretary therefore decided that this new vaccine was not properly the subject of investigation. Accordingly I was instructed to make no tests on it.

3. The printed directions regarding dosage for immunization were published six months after the experiments were begun. Dr. von Ruck's oral instructions, however, were faithfully followed. The dose of virulent bacilli, he told me, varied from 0.01 to 0.1 mg., according to virulence. My strain not being highly virulent, the larger amount was used. The average duration of life in control animals with this amount was ninety-six days, including a number of animals dying prematurely from complications. The printed directions recommend a strain causing death in about sixty days, so that my infecting dose was a reasonable one.

4. The serums used by me prior to May 15, 1914, were both supplied and tested by Dr. von Ruck, who personally sent for previously vaccinated persons to be brought to his laboratory, in order that I might obtain blood from them for examination. I never made surreptitious collections of serum, although I did not communicate my results after having reason to distrust the scientific honesty of his staff.

5. Serums sent from Asheville were carefully kept cold, and used as promptly as possible. I do not believe that deterioration accounts for the lack of antibodies in these serums, as good complement fixation has been repeatedly secured with serums sent from New Mexico. No specimen was intentionally omitted from examination and report.

The specific details of the shortcomings of Dr. von Ruck's records which I published in the Senate report show that my objections were based not on inference but on observation.

As far as I am aware, Dr. von Ruck never makes serologic tests himself. He relies on his assistants, although he occasionally inspects results. The following quotations from one of his letters to Dr. Anderson, explaining the inconsistency of his results, justify my belief that much of the work done at his laboratory was unscientific and unreliable. Referring to a former assistant who had performed tests for demonstration purposes during the visit of a certain government official, Dr. von Ruck says that in response to query as to the use of serum controls "he wrote confidentially that he made serum controls only when 'he wanted to show off' [*sic*] and that one of the occasions was the one referred to." Referring to one of his assistants who was at the laboratory at the time of the investigation, he says, "I cannot but believe that he purposely and wilfully deceived me, and persists in telling me what he knows is not true, namely, that he always used serum controls, unless in specimens received from a distance, and in which the amount of available serum was not enough." Again, "my inference that——[the same assistant] for some reason best known to himself deceived me, is I believe justified, until the contrary is proved. I find further, that the more precaution I demand, and the more I personally control the work, the more frequent are the failures, and that the 'uniformity' of successful work can had [*sic*] no foundation in fact. . . . I had the same troubles in London; we had but few 'clean cut' results, and am thus convinced, that the uniformity, shown by——prior to August, 1912, had no existence in fact and that if he had used serum controls as he persists in assuring me, he could not possibly have missed a like experience as is before me since that time."

The composition and use of the von Ruck vaccine are based to a great extent on complement fixation tests. Such tests without full controls are valueless.

If then, Dr. von Ruck has had such experiences with the tests and with his assistants, the validity of his results and of his records may well be questioned.

This investigation was undertaken without prejudice, and continued impartially. It is a matter of regret that in accordance with the facts, an adverse opinion had to be rendered.

A. M. Stimson, M.D., Washington, D. C.
Assistant Director, Hygienic Laboratory.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. *Every letter must contain the writer's name and address, but these will be omitted, on request.*

METOL DERMATITIS

To the Editor:—1. What is Metol developer used by photographers?
2. What are the symptoms and end result of Metol poisoning?
3. What is the best treatment?

E. M. Stansbury, M.D., Vermilion, S. Dak.

Answer.—1. Metol is the trade name for methyl-para-amino-phenol sulphate.

2. It produces a dermatitis accompanied by ulceration which may result in fissures and cracks which are slow to heal.

3. There have been various recommendations for prophylaxis and treatment. Coating the hands with petrolatum before beginning development is a useful precaution. L. A. Freeman (*British Journal of Photography,* June 5, 1914) recommends that 2 drops of pure phenol (carbolic acid) be added to a quart of cold water. Immerse the hands in it after the use of Metol, and warm gently over a gas flame until the heat is no longer tolerable. Then wash thoroughly with carbolic soap, and dry well.

Before the skin is broken N. T. Beers (*New York Med. Jour.,* Sept. 10, 1908; abstr. The Journal, A. M. A., Sept. 26, 1908, p. 1107) recommends soothing applications such as lead lotion. After the skin is broken, care must be taken to protect the parts thoroughly and to use the blandest of applications. Zinc stearate with 1 or 2 per cent. of phenol or salicylic acid makes a useful dusting powder. In the later stages more stimulating applications may be used, such as small amounts of oil of cade or of resorcin or ichthyol.

The following ointment has been advised: ichthyol, resorcinol, glycerin, of each, 1 ounce; zinc oxid, ½ ounce; white petrolatum, 6 ounces (*Brit. Jour. Photog.,* Nov. 7, 1913, p. 860).

DIET IN TYPHOID FEVER

To the Editor:—Please give me a list of recent articles relative to the treatment of typhoid fever, with special reference to diet.

O. F. Wellenreiter, M.D., Gessie, Ind.

Answer.—The following is a list of articles on this subject:

Barker, L. F.: Diet in Typhoid Fever, *The Journal,* Sept. 12, 1914, p. 929.

Coleman, W.: *Effects of Food on* Metabolism in Typhoid Fever, The Journal, Sept. 12, 1914, p. 932.

Kenefick, M. J.: Increased Diet in Typhoid: Arguments for and Against, *Iowa State Med. Soc. Jour.*, April, 1913.
Graves, M. L.: Some Clinical Experiments in Treatment of Typhoid with Calorie Food Values, *Texas State Jour. Med.*, May, 1913; abstr., The Journal, May 24, 1913, p. 1668.
Cornwall, E. E.: Rational Diet for Typhoid, *Med. Rec.*, Oct. 3, 1914; abstr., The Journal, Oct. 17, 1914, p. 1425.
Bodenstab, W. H.: Typhoid Feeding, with Special Reference to High-Calory Diet, *Journal-Lancet*, Jan. 15, 1914.
Sicard, M. H.: High Calory Diet in Typhoid, *Med. Rec.*, March 22, 1913; abstr., The Journal, April 5, 1913, p. 1107.
Crohn, B. B.: Experiences with the Coleman-Shaffer Diet in Typhoid, The Journal, Jan. 27, 1912, p. 259.
Diet in Typhoid, editorial, The Journal, Feb. 3, 1912, p. 346.
Coleman, Warren: Five Years' Experience with the High Calory Diet in Typhoid, The Journal, Aug. 3, 1912, p. 363.
Howlett, K. S.: Diet in Typhoid, *Tenn. Med. Assn. Jour.*, Jan., 1912.
Coleman, Warren: High Calorie Diet in Typhoid—111 Cases, *Am. Jour. Med. Sc.*, January, 1912.
Garton, W. M.: New Diet in Typhoid, *Mil. Surg.*, March, 1912.
Rodgers, G. C.: General Diet in Typhoid, *Virginia Med. Semi-Monthly*, May, 1912.

APPARATUS FOR MOISTENING THE AIR—EFFECT OF DRY AIR ON RESPIRATORY DISEASES

To the Editor:—In the issue of January 2, you recommend for the prevention of colds that we should see that the air contains the proper amount of moisture.

1. Please inform me how the air in steam-heated rooms can best be moistened.

2. What is the best instrument to use to detect changes in humidity in rooms? What is its price, and where can it be purchased?

3. Please give references to the effects of dry air on the spread of respiratory disease.

M. M.

Answer.—1. There are many types of humidifying apparatus. It is difficult to recommend any specific form unless the conditions of operation are precisely known. A very simple and often effective means of adding moisture in steam-heated rooms is to let some of the steam from the radiator pass directly into the room atmosphere.

2. The Committee of the American Public Health Association on Standard Methods for the Examination of Air (*Am. Jour. Pub. Hyg.*, 1910, xx, 346) recommends the sling psychrometer, used by the United States Weather Bureau. This apparatus consists of two mercurial thermometers fixed to an aluminum back and mounted by a handle, by which they can be whirled. Full directions for its use are printed in Bulletin 235 of the United States Weather Bureau. The instrument may be obtained from Schneider Brothers of New York or from Queen and Company.

3. Much less is known about the problem of humidity in ventilation than about that of temperature. A sound physiologic foundation for artificial humidification is still lacking. Experiments being carried out by the New York Ventilation Commission may throw some light on this matter. A paper by Clark and Gage, dealing with certain features of this subject and entitled "A Study of the Hygienic Condition of the Air in Certain Textile Mills with Reference to the Influence of Artificial Humidification" appeared in the *American Journal of Public Health*, 1913, iii, 1176.

THE HARRISON ANTINARCOTIC LAW

To the Editor:—1. May a physician without formally registering with the Collector of Internal Revenue, dispense a cough mixture containing more than ⅛ gr. of heroin to the ounce after March 1 next?

2. If registered as above is it necessary to keep a formal record of same more than his regular office memorandum?

3. May a physician who has not formally registered, write a prescription for above?

4. Is it necessary to keep a formal record of such prescription?

F. R. F.

Answer.—1. Section 6 of the law provides that the provisions of the act shall not be construed to apply to the sale, distribution, giving away, dispensing or possession of preparations which do not contain more than . . . ⅛ of a grain of heroin in one fluidounce, etc. Obviously any mixture containing more than ⅛ of a grain of heroin to the fluidounce would not be exempt. A prescription for such a preparation must therefore be signed by a physician "registered under the act."

2. The second question is ambiguous. Registered physicians are required to keep a record only of preparations which they dispense. They are not required to keep a record of prescriptions.

3. Unregistered physicians could write prescriptions for a cough mixture containing more than ⅛ grain of heroin, but a druggist could not fill it.

4. Physicians are not required to keep a record of prescriptions but only of preparations which they dispense. Druggists must keep record of prescriptions subject to inspection.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Connecticut: New Haven, March 8-9. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic; New Haven, March 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic: New Haven, March 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Maine: Portland, March 9-10. Sec., Dr. F. W. Searle, 776 Congress Street.

Massachusetts: Boston, March 9-11. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Missouri: St. Louis, March 22-24. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Missouri September Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the oral and written examination held at Kansas City, Sept. 28-30, 1914. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 41, of whom 35 passed and 6 failed. The following colleges were represented:

College	Year Grad.	Total No. Examined
PASSED		
Bennett Medical College	(1914)	1
Chicago College of Medicine and Surgery	(1914)	2
Northwestern University	(1914)	1
University of Illinois	(1914)	1
Louisville and Hospital Medical College	(1908)	1
Louisville Medical College	(1896)	1
American Medical College	(1914)	8
Barnes Medical College	(1910)	1
Ensworth Medical College	(1914)	1
Kansas City Hahnemann Medical College	(1903,1) (1912,1)	2
Marion-Sims-Beaumont Medical College	(1902)	1
St. Louis College of Physicians and Surgeons	(1914)	6
St. Louis University	(1914)	1
University of Oklahoma	(1914)	2
Jefferson Medical College	(1906)	1
Meharry Medical College	(1914)	3
Vanderbilt University	(1914)	1
Royal University of Pavia, Italy	(1910)	1
FAILED		
American Medical College	(1914)	2
St. Louis College of Physicians and Surgs.	(1912,1) (1914,2)	3
University of West Tennessee	(1914)	1

New Mexico October Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports that thirteen candidates were licensed on presentation of satisfactory credentials at the meeting held at Santa Fé, Oct. 12-13, 1914. The following colleges were represented:

College	Year Grad.	Total No. Licensed
College of Physicians and Surgeons, Chicago	(1910)	1
College of Physicians and Surgeons, Kansas City, Kan.	(1898)	1
University of Louisville	(1907)	1
Barnes Medical College	(1899)	2
University Medical College, Kansas City	(1911)	1
Washington University	(1909)	1
Cincinnati College of Medicine and Surgery	(1884)	1
Western Reserve University	(1909)	1
University of Nashville and Tennessee	(1911)	1
Vanderbilt University	(1909) (1912)	2
Syrian Protestant College, Beirut	(1912)	1

Connecticut Homeopathic November Report

Dr. E. C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, Nov. 10-11, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. Two candidates were examined and passed. One candidate was licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Boston University	(1914)	89
Hahnemann Medical College of Philadelphia	(1913)	82

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
New York Homeo. Med. Coll. and Flower Hospital	(1897)	New York

Book Notices

Symptomatology, Psychognosis and Diagnosis of Psychopathic Diseases. By Boris Sidis, A.M., Ph.D., M.D., Medical Director of the Sidis Psychotherapeutic Institute. Cloth. Price, $2.50 net. Pp. 448. Boston: Richard C. Badger, 1914.

To the various new procedures in the study of the psychology of abnormal mental states is undoubtedly due the large amount of recent literature concerning this subject. Medical colleges are beginning to awaken to the new interest in psychiatry, and in general the courses, which previously were hardly up to the standard of other departments, have begun to broaden out in such a manner as really to cover psychopathic diseases. "To one case of insanity," says Sidis, "there are thousands of cases of functional neurosis and psychopathic affections which have absolutely nothing to do with insanity, affections which the psychiatrist, from the very nature of his training, is neither in a condition to grasp nor able to deal with." In the introduction Sidis discusses the recent intense interest in psychanalysis, and attacks fiercely the Freudian school. He says, "The sight of some medical dignitaries taking a regular bath in sexual filth, possibly as a matter of redemption and expiation, would be ludicrous, if it were not so pathetic. . . . Psychoanalysis is a form of medical bacchanalia. . . . Psychoanalysis is a sheer humbug." The book is divided into three parts, one including subconscious states and borderland phenomena, the second, psychopathic diseases, and the third psychognosis and diagnosis. By psychognosis the author means the complete detailed study which will enable the observer to obtain a working knowledge of the patient's soul. This embodies the use of all the available best methods. The sanatorium treatment is evidently included, for he says, "It is best to live with the patient. . . ." A few of the chapters have appeared previously in periodical publications. There is a wealth of information and a thorough discussion of dissociation and hypnoidal states, on which Sidis' views are authoritative. In a number of appendixes are given methods of examination for the various disease states considered, "The Hypnoidal State" of Sidis discussed by T. W. Mitchell, and two other interesting essays somewhat apart. The work is interesting and worthy of thorough consideration by those who are attempting to keep abreast in this rapidly advancing field.

The Vaccination Question in the Light of Modern Experience. An Appeal for Reconsideration. By C. Killick Millard, M.D., D.Sc., Medical Officer of Health for Leicester. Cloth. Price, 6 shillings net. Pp. 243, with 10 illustrations. London: H. K. Lewis, 1914.

The author makes a serious effort to review the vaccination situation in England in the light of experience gained in recent years, and to determine whether or not compulsory vaccination, especially compulsory infantile vaccination, is necessary or advisable under present conditions. He believes absolutely in vaccination for the protection of the individual against small-pox, especially in those exposed to infection. He questions the value "to the community" under present-day conditions of infantile vaccination, holding that sanitation has played a much more important part in the prevention of small-pox in the last forty years than has infantile vaccination. He declares that the dangers of infantile vaccination and the injuries to health caused by it are not sufficiently appreciated by physicians, and that there is definite evidence that small-pox is disappearing in spite of the increasing neglect of vaccination. He asserts that the greatest difficulty in controlling small-pox to-day is the mild unrecognized cases found chiefly (?) among persons vaccinated in infancy, and because they were so vaccinated. From this basis he argues that infantile vaccination has a distinct tendency to encourage the spread of small-pox. His arguments, which really bear only on conditions in England, are based on an analysis of the mortality records of England for the past 150 years, and on his own experience as health officer in Leicester.

Medicolegal

Negligence and the Use of Unsterilized Instruments

(Rogers vs. Tegarden Packing Co. (Mo.), 170 S. W. R., 675)

The Springfield (Mo.) Court of Appeals, in discussing the nature of negligence, says that the latter has been defined as being the failure to exercise that degree of care which ordinarily prudent persons are accustomed to exercise under like circumstances. Negligence is purely a relative term, and depends on the facts of the particular case. A certain act is to be done, and two ways are open for performance, one as much at hand and within the grasp of the actor as the other. One way, by the very nature of the circumstances, is more hazardous and dangerous than the other. By voluntarily following one method an injury may be reasonably and naturally anticipated. By using the other method the act can be performed in safety. In such a case, a court would be called on to say which method reason and prudence and ordinary care would dictate. As an illustration: A surgeon is called to attend an injured man, and an immediate operation is imperative. The only instrument at hand is one that shows it has not been sterilized, from which fact he must know that to use it may infect the patient and cause blood poisoning. He must use it in that condition or not at all. He does use it and blood poisoning follows. His course is questioned. To determine whether he was negligent in using such an instrument, it must be ascertained whether, under the circumstances, he used such care as a reasonably careful surgeon would have exercised, or whether the apparent condition of the instrument rendered its use so dangerous that no prudent surgeon would have taken the chances of operating with it. Now, suppose there were at his hand not only this instrument, but another which showed that it was properly sterilized, and the surgeon had the choice between them, and chose the unsterilized instrument. His conduct would then be measured by a determination of which instrument an ordinarily prudent surgeon would have used. While it cannot be laid down as a set rule that ordinary prudence requires every act to be done in the safest way, yet in determining whether the way it was done meets the requirement as to the exercise of ordinary care, either as a question of law or one of fact, there must be taken into consideration the circumstances surrounding the occurrence of an injury sustained in doing the act.

Power of Local Bodies to Require Vaccination of Schoolchildren

(Zucht vs. San Antonio School Board (Tex.), 170 S. W. R., 840)

The Court of Civil Appeals of Texas affirms a judgment in favor of the defendant in this suit to compel it to permit the plaintiff's children to attend the public schools of the district without vaccination. The court says that the power of local bodies to require the vaccination of schoolchildren as a condition to their admission to public schools, in the absence of express authority, is dependent on the conditions existing in the community with reference to small-pox. When an epidemic exists, or is imminent, there can be no doubt that the power may be exercised. It has also been held that such regulations may be adopted and enforced when small-pox exists in a community, and by some courts the expression is used that such regulations may be adopted when an epidemic is reasonably apprehended. In this case it was found that no epidemic existed or was imminent, but that the existing conditions with reference to small-pox constituted a menace to the public health. The court concludes from its investigation of the authorities that it is not necessary for an epidemic to exist or be imminent in order for the school board to be justified in adopting and enforcing the regulation complained of, because, if the conditions are such that they constitute a menace to the public health, it cannot be said that the board's action was unreasonable and that the want of necessity for the measures has been shown to be clear, manifest and undoubted. If existing conditions constitute a menace to the public health, an epidemic is threatened, and it cannot be said that it did not reasonably appear to the board to be necessary to adopt the regulation.

The court cannot agree with the contention that, as the regulation in question did not provide when it was to expire, it was permanent and to be enforced whether or not conditions justified it, and that it was therefore void. Ordinances and regulations which are valid when measured by existing conditions become unenforceable when such conditions cease. They need not provide the time when they shall cease to be in effect or that they shall expire when certain conditions change.

Nor was the regulation unreasonable and void because it provided that a child or teacher who brought a certificate from a physician to the effect that the health of the teacher or child was such that vaccination should not be done, could be admitted for sixty days without vaccination if the school physician so recommended, and should the child at the end of said time produce another such certificate, then that the question be referred to the board of health of the city together with the school physician to determine whether and how long the child might attend the schools without vaccination. This was attacked on the ground that the question of admission was first left to the arbitrary discretion of the school physician, and ultimately to said physician and the board of health of the city. But the court will not assume that the power will be exercised arbitrarily, nor should the regulation be construed as authorizing such an exercise thereof, for it is apparent that all decisions with respect to the matter are to be based on the physical condition of the child, and the power is placed in the hands of persons competent to investigate and make a decision which will not be arbitrary.

If the school board can keep out children afflicted with contagious diseases and those who have been exposed to the contagion, without coming into conflict with the state constitution and statutes, it also has the power to keep out those who fail to comply with other regulations reasonably necessary to protect the health of those attending the schools.

Society Proceedings

NEW YORK ACADEMY OF MEDICINE

Meeting held Dec. 17, 1914

The President, DR. WILLIAM M. POLK, in the Chair

Blood Transfusion

DRS. R. OTTENBERG and E. LIBMAN: We have studied 212 transfusions in 189 cases at the Mount Sinai Hospital. Of these, eighty-five cases, or 45 per cent., were successful in that the condition of the patient was greatly improved, and forty-two of these, or 20 per cent. of the whole number, were actually life-saving.

Successful Cases (85): 1. Cases in which prognosis was extremely bad, and transfusion saved life (42): (*a*) cases which subsequently completely recovered (29); (*b*) cases in which the original underlying disease continued (13). 2. Cases with recovery, in which prognosis before transfusion was not desperate (43).

Unsuccessful Cases (104): 1. Cases in which there was temporary improvement following transfusion, with death later from continuation of the original disease. 2. Cases with death from some disease necessarily fatal and in which transfusion could not have been expected to do much good. 3. Cases in which transfusion did little or no good, although from the nature of the disease a good result might have been possible.

The most interesting cases were those in which the transfusion was life-saving. These were almost all cases of hemorrhage either from operation, disease or hemorrhagic diathesis. Some of them were cases of grave chronic anemia or poisoning.

Indications for transfusion: 1. Transfusion for simple hemorrhage: (*a*) gastric and duodenal ulcer; (*b*) dysentery; (*c*) typhoid hemorrhage; (*d*) ectopic pregnancy.

2. Transfusions in connection with surgical operations: (*a*) preliminary to operation; (*b*) for postoperative hemorrhage; (*c*) for shock.

3. Transfusions for the cure of hemorrhagic conditions: (*a*) purpura hemorrhagica; (*b*) hemophilia; (*c*) hemorrhages secondary to: (1) blood diseases; (2) severe infectious disease; (3) jaundice (cholemia).

4. Transfusions for blood diseases: (*a*) pernicious anemia; (*b*) leukemia.

5. Transfusions for infections: (*a*) infections with pyogenic organisms; (*b*) infective endocarditis.

6. Transfusions for intoxications: (*a*) acute poisoning; (*b*) diabetic coma.

7. Transfusions for debilitated conditions: (*a*) cancer; (*b*) malnutrition; (*c*) simple anemia.

In the cases of hemorrhage from gastric or duodenal ulcer the results were exceedingly good; although all of the patients were in a desperate condition at the time of the transfusion, twelve of the fourteen recovered. In dysentery, on the other hand, the results were rather poor. In typhoid fever the results were exceedingly encouraging. Among seven transfusions, four were successful in relieving the immediate symptoms of hemorrhage. In the three cases of ectopic pregnancy, transfusion was life-saving. Among the most satisfactory transfusions in the whole series were some done preliminary to operation in patients whose condition would otherwise have contra-indicated any other operation. There were twenty-three such preoperative transfusions, and in thirteen of them the result was decisive and the patients recovered. In shock the results were very disappointing. We believe, however, that if shock could have been foreseen, so that the transfusion could have been done immediately instead of after several hour's delay in obtaining a donor, the results might have been better. The best results in all the series of cases were those in the group of hemorrhagic conditions. Of the nine patients with purpura hemorrhagica, six recovered completely and one left the hospital improved. In five of the six cases of hemophilia treated, the hemorrhage stopped promptly, and the coagulating property of the blood became practically normal. We suggest as a prophylactic treatment for hemophilia that every individual known to have hemophilia ought to have at his command several persons whose blood, by previous tests, is known to be compatible with his own. Whenever serious hemorrhage occurs, prompt transfusion should be done. In almost all of the thirty-five cases which had been transfused for hemorrhagic disease, the serum treatment had been tried out thoroughly before the transfusion and had had no effect; we believe, however, that the serum treatment deserves a further trial. In cholemic hemorrhage the results were rather disappointing; only one of the seven patients recovered. In regard to pernicious anemia, and our study embraced twenty-four cases, transfusion is the best remedy, and though it never cures, it leads to remission in about half the cases. If the first transfusion fails to bring about remission, one should be tried from a different donor. Splenectomy in pernicious anemia has about the same effect as transfusion. This should be reserved as a final method of producing remission when transfusion will no longer do so. In myelogenous leukemia and acute lymphatic leukemia, transfusion was without effect, but in four of the five cases of chronic lymphatic leukemia, transfusion was followed by a remarkable remission in which the blood picture returned temporarily to the normal. The ultimate outcome of course was not affected. In bacterial infections, transfusion is of value only in so far as it restores the general resistance of the patient. In gas poisoning, transfusion is almost a specific treatment and should be accompanied by phlebotomy. In diabetic coma it is useless.

Treatment of Pernicious Anemia by Transfusion

DR. E. LINDEMAN: The results of transfusion are often brilliant, sometimes only temporary, and sometimes indifferent and even poor; in my opinion, this variable response is due in part to the extent and seat of the pathologic invasion and, in some cases, to the incompatibility of the blood introduced. Splenectomy in pernicious anemia was not an accidental thought, but was arrived at through laborious study and logical reasoning. About thirty-five cases of splenectomy have been reported. I have had under observation six cases of splenectomy with transfusion for pernicious anemia. From a close study of these and about thirty other cases I conclude as follows: 1. Splenectomy plays an important part in the course of events in this disease. 2. The removal of the spleen reduces the blood destruction. 3. The extreme blood crises do not occur after splenectomy. 4. Splenectomy does not cure the disease; the patients still maintain the blood picture of a primary anemia, though clinically normal. 5. Considering the course of the disease, the procedure is entirely justifiable. 6. Cases should be selected carefully, and those showing petechiae, hemorrhage, mental disturbances and marked cord disturbances should be considered unfavorable to this procedure. Cases in which the vital staining cannot be demonstrated belong to the unfavorable group. 7. The patient should be transfused before splenectomy, and he must not be allowed to make the blood himself. In many cases he cannot; but even if he can, he should not be permitted to do so. By blood transfusion, the bone-marrow function is conserved for the vital need of the patient in the future.

DR. MORRIS MANGES: Five or six years hence the field for transfusion will be larger. The failures which have been reported so candidly are small when compared with the striking results obtained by transfusion. I have never seen a case in which transfusion was done as in one case of typhoid fever in which the primary attack lasted seventy-eight days. Without the transfusion, this case would have been shorter and fatal. The first transfusion was done on the thirty-eighth day, when the patient had a third hemorrhage and was in a desperate condition. The transfusion checked the hemorrhage, and the patient went on with the disease. On the sixty-sixth day the blood culture showed that typhoid bacilli were still present, and the condition of the patient was as bad as could be conceived, and petechiae were abundant. A second transfusion was done, and within six days the patient was convalescent.

DR. WILLY MEYER: I have performed transfusion in two cases of pernicious anemia with marked temporary improvement. Perhaps the lives of both patients might have been saved had splenectomy been added and the transfusion continued. I wish to say a good word for the subcutaneous injection of human blood serum in hemophiliacs and in patients suffering from chronic jaundice. In both, the secondary parenchymatous hemorrhage can often be well overcome by prophylactic and repeated injections of the serum. I wish to emphasize the necessity of the injections before operation. This kind of preparation is simpler than transfusion. However, transfusion is preferable in case the patient is also rather anemic.

DR. EUGENE H. POOL: I have adopted this method in ten cases without much difficulty. The method is valuable in cases of hemorrhage with jaundice; in this condition it might be well to use it as a prophylactic measure. It is also of value as an anteoperative procedure in cases of extreme anemia.

DR. WILLIAM A. DOWNES: In regard to splenectomy plus transfusion in pernicious anemia, five of the patients whose histories were given were transfused by Dr. Lindeman and later splenectomized by me. Two were of the type in which there were marked cerebral symptoms, and they should not have been operated on. There was a continuation of the symptoms, and death in both cases in from two to three weeks. The other three have done remarkably well, and while a cure could not be claimed, it did seem that splenectomy with transfusion both before and after operation offered more in this disease than any treatment yet proposed.

DR. LOUIS HAUSWIRTH: Remissions in this disease are just as long after transfusion in pernicious anemia as after splenectomy.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

January, CXLIX, No. 1, pp. 1-156

1 *Abnormalities of Endocrine Functions of Gonads in Male. L. F. Barker, Baltimore.
2 *Syphilitic Nephritis. A. Stengel and J. H. Austin, Philadelphia.
3 Infectious Diarrhea. J. L. Morse, Boston.
4 *Damage Done by Pyelography. E. L. Keyes, Jr., and H. Mohan, New York.
5 Results and Interpretation of Wassermann Test. C. F. Craig, U. S. Army.
6 Analgesia and Anesthesia in Labor. E. P. Davis, Philadelphia.
7 Functional Heart-Block. Report of Three Cases. T. S. Hart, New York.
8 *Aconite as Vasodilator. W. H. Thomson, New York.
9 When and How To Use Tuberculin Preparations in Private Practice. S. S. Cohen, Philadelphia.
10 *Eczematoid Ringworm, Particularly of Hands and Feet. M. B. Hartzell, Philadelphia.
11 *Aortic Aneurysm with Recurrent Fever. A. McPhedran, Toronto, Canada.
12 Early Diagnosis of Spinal Cord Tumors. J. Collins and H. E. Marks, New York.

1. **Endocrine Functions of Gonads in Males.**—More and more, Barker says, are we forced to realize that the general form and the external appearance of the human body depend to a large extent on the functioning, during the early developmental period (and later) of the endocrine glands. Our stature, the kinds of faces we have, the length of our arms and legs, the shape of the pelvis, the color and consistency of our integument, the quantity and regional location of our subcutaneous fat, the amount and distribution of hair on our bodies, the tonicity of our muscles, the sound of the voice and the size of the larynx, the emotions to which our *extérieur* gives expression — all are to a certain extent conditioned by the productivity of our hormonopoietic glands. We are simultaneously, in a sense, the beneficiaries and the victims of the chemical correlations of our endocrine organs. More than ever before, is the minute examination of the external appearance of the body—the habitus—of significance for the practicing physician who desires to make accurate diagnoses.

2. **Syphilitic Nephritis.**—The clinical significance of the appearance of doubly refractile lipoids in the urine, and especially their possible relation to a syphilitic nephritis, led Stengel and Austin to examine the urine fifty-eight times in forty-six cases, with a polarizing microscope. Of these 46 cases, 23 patients showed nephritis with an abundance of albumin and casts in the urine. Of these 23, 6 had positive Wassermann, 3 had strong presumptive evidence of syphilis but not positive Wassermann, 14 had not the slightest evidence of syphilis. The 6 patients with positive Wassermann all showed lipoids in the urine, whereas of the 14 nonsyphilitic cases only 5 patients showed lipoids in the urine. The rest of the 46 cases studied were made up in part of cases of nephritis of the interstitial or arteriosclerotic types, with only traces of albumin in the urine and a few hyaline and granular casts, in some cases in which syphilis was present and in some in which it was not, in part, of syphilitic cases in which there was no nephritis and, in part, of control cases showing neither syphilis nor nephritis. None of these cases showed lipoids in the urine. One of the 6 syphilitic patients with nephritis showing lipoids in the urine, had not received any mercury.

Stengel and Austin believe that the evidence suggests that there exists a parenchymatous type of nephritis due to syphilis, characterized by an abundant albuminuria, with many hyaline, granular, and occasionally epithelial casts, with a tendency to produce edema of renal distribution. This is associated, as a rule, with a moderate reduction of phenolsulphonephthalein output and exhibits an almost constant tendency to the presence of doubly refractile lipoid globules varying in size from that of an erythrocyte to globules three or four times this diameter, seen sometimes floating free in the urine but not rarely as a constituent of a compound granular cell or possibly on an epithelial cast. On the other hand, similar lipoid globules may be found in severe acute or chronic parenchymatous nephritis of other etiology, but in only a minority of cases. Of further interest is the fact that in 66 out of the last 84 cases of nephritis, there could be recognized from the histories, such possible etiologic influence as infections, lead, alcohol, excessive work, exposure, senility, etc.; but in 18 cases no such factors could be determined. Of these 18 cases, there existed in 8 either an unquestionable history of syphilis or a positive Wassermann or both; in 6 more of these cases no Wassermann had been secured; while in 4 syphilis was definitely excluded.

4. **Damage Done by Pyelography.**—Experiments on dogs made by Keyes and Mohan showed that momentary gentle distention of the normal pelvis of the kidney doubtless causes no more damage than a congestion of the organ, doubtless of brief duration; but if the distention persists for a few minutes the injected fluid is absorbed into the blood-vessels and lymph-spaces about the kidney pelvis. Although, like Strassmann, the authors have been unable to detect any collargol forced into the collecting tubules, they found collargol in the glomeruli and in the convoluted tubules. As there was much less collargol within the glomeruli and tubules than in the lymph-spaces and vessels, they conclude that the appearance of the collargol within the glomeruli and tubules is a secretory phenomenon.

In actual practice a secondary infiltration due to renal retention following the examination must be considered. The secondary distention is of far greater importance than the primary retention at the time of injection. It is the cause of most of the deaths that have been reported from pyelography. The cause of infiltration in these cases is ureteral obstruction. Hence, it may occur when there has been no primary distention. Alarming symptoms following pyelography are to be relieved by immediate drainage of the kidney or nephrectomy. The presence of collargol in the kidney parenchyma should not be a cause of apprehension, though it shows that the injection has been made with too much force. The collargol may enter the general circulation and be distributed to the other kidney and elsewhere, in some instances at least, and yet no great harm results.

8. **Aconite as Vasodilator.**—After an experience of years in its use for this purpose, Thomson regards aconite as the most efficacious vasodilator when given systematically in full doses. Aconite thus administered at once reduces blood pressure, produces a full and compressible pulse, and greatly increases the percentage of the elimination of urea in interstitial nephritis.

10. **Eczematoid Ring-Worm.**—Hartzell has found the ointment suggested by Whitfield, which contains 3 per cent. of salicylic acid with 5 per cent. of benzoic acid, most effective; but, he says, it cannot be used, as Whitfield has pointed out, without some degree of caution in markedly inflammatory cases, as it occasionally produces considerable irritation.

11. **Aortic Aneurysm With Recurrent Fever.**—Five or six weeks before entering the hospital, McPhedran's patient, a woman 36 years of age, of bad habits, is said to have been kicked below the right scapula. She complained of pain in this part, and she was troubled with nausea and vomiting. Over the part there was dulness, and the breathing sounds were weak. There were 13,500 leukocytes per centimeter, the increase being in the polymorphonuclear cells. Her temperature was 104 F. She did not appear seriously ill; with the fall of temperature the leukocytes returned to normal and remained so even in the recurrent attacks of fever. The signs in the chest grew gradually less marked and the pain ceased. In the general examination of the chest signs of dilated aorta were found. The Wassermann test gave a marked reaction.

She was kept five weeks under observation in order to note the natural course of the fever—it showed little if any improvement. Then mercurial inunctions were used and potassium iodid given. There was only one sharp rise of temperature after that, but slight, somewhat irregular fever persisted, and six weeks later salvarsan was resorted to. A first intravenous injection of 0.3 gm. was given. There was no reaction. Eight days later 0.6 gm. was given, still without reaction. A similar dose was given eight days later, followed by a slight short reaction, the temperature rising to 100 F., but falling to normal and remaining so. A fourth dose was given after ten days, and the reaction was rather sharp, the temperature reached 102.5 F., but again fell and remained normal. Thirteen days later the last injection was given; the reaction was less; temperature, 101.5 F. After that the temperature remained normal while in the hospital—six weeks—and her general health improved very much, but there was no change apparent in the state of the aorta or the aneurysm, and the Wassermann reaction was quite as marked.

Annals of Surgery, Philadelphia

January, LXI, No. 1, pp. 1-128

13 Cancer Problem. C. M. Moullin, London.
14 Influence of Inhalation Anesthesia on Acidity of Blood. G. W. Crile, Cleveland.
15 Structure of Encephalocystocele. C. Savini, New York.
16 Cerebral Surgery. J. H. Kenyon, New York.
17 Laryngeal Diverticula; Report of Cases. G. E. Shambaugh and D. Lewis, Chicago.
18 *Roentgenologic Diagnosis of Surgical Lesions of Stomach and Duodenum. G. E. Brewer and L. G. Cole, New York.
19 Persistent Embryonal Type of Large Intestine. H. B. Delatour, Brooklyn.
20 Fracture of Tip of Internal Condyle of Femur. M. G. Sturgis, Seattle, Wash.
21 Joint Mouse. L. W. Ely, San Francisco.
22 *Keloid Formation in Negro. A. G. Brenizer, Charlotte, N. C.
23 Fixation of Simple Fractures. J. O'Conor, Buenos Ayres.
24 *Tendon Fixation for Deformity Resulting from Partial Paralysis. W. E. Gallie, Toronto, Ont.
25 Blood-Vessel Clamps of Practical Utility. B. M. Bernheim, Baltimore.

18. **Roentgen Diagnosis of Stomach and Duodenum Lesions.**—The interpretation of the roentgenograms and the diagnosis of the 27 consecutive cases described in this communication are the result of a study of about 20,000 roentgenograms in 700 cases. The 27 cases reported include all cases examined roentgenographically by Cole and subsequently operated on by Brewer. Each case was referred to Cole with the simple statement that an organic lesion of the stomach or duodenum was suspected; no history or data obtained by physical examination or gastric analysis being furnished. As a result of the roentgenographic examination, a typewritten report was returned, giving the exact findings and an opinion regarding the presence or absence of a gastric or duodenal lesion, its location, extent and probable cause. In several cases a lesion of some other portion of the gastro-intestinal tract was diagnosticated. Later each case was explored, and the findings at operation were recorded.

Of the 22 cases in which a definite diagnosis was made by the Roentgen method subsequent operation proved that in 20 instances this diagnosis was correct, and in 2 it was incorrect. In 11 of these cases the diagnosis was negative as to the presence of a gastric or duodenal lesion, although the clinical history so strongly suggested ulcer or carcinoma as to justify exploratory operation. In not one of these cases was an organic lesion found to exist. In the five instances in which the roentgenologic diagnosis was not definitely stated, owing to incomplete observation or unusual findings which could not be definitely interpreted, and concerning which only an opinion was expressed as to the probable lesion present, the opinion proved to be correct in four instances and incorrect in one instance. In other words, in this particular series, a correct diagnosis was made by serial roentgenography in 89 per cent. of the cases.

22. **Keloid Formation in Negro.**—Brenizer states that the negro is much more susceptible to all connective-tissue tumors than the white man, about 2 to 1. The negro at birth shows many gross congenital malformations and, on the dissecting table, many anomalies of blood vessels and nerve

formations confuse the student as he follows his text-book guide. These perverted structural conditions point to an instability in the equilibrium of growth. There must be some disturbance of an inhibitory influence which holds the growth of the cells in check and prevents their growth at random. If the abnormal growth of cells is due to an injury of an inhibitory substance, this substance must be injured before the cells can grow. This inhibitory substance is then more sensitive than the cells themselves. If we possess evidence of a much greater preponderance of abnormalities of growth and tumor formation in the negro than in the white man, we may know that this inhibitory substance is weaker and more unstable than in the white man. Therefore, irritation which might pass without a demonstrable effect in the white man, might so injure this inhibitory substance in the negro as to allow an overgrowth of the dermal connective-tissue cells and the formation of a fibroma, a keloid.

24. **Tendon Fixation for Deformity.**—In the case cited by Gallie, that of a boy, 5 years of age, the calf muscle seemed to have about one-quarter of the normal power, the tibialis posticus no power at all, and the peronei, tibialis anticus, dorsi flexors and plantar flexors of the toes about normal power. The result was a moderate calcaneovalgus, the patient walking entirely on the heel and with considerable valgus, apparently making no use of the power still persisting in the calf. The following operation was done: A vertical incision 5 inches long was made along the outer side of the tendo achillis, down to the posterior extremity of the os calcis. The sheath of the tendo achillis was split throughout the length of the incision and the tendon exposed. The tendon was then split into an anterior and a posterior half from the upper end of the incision down to the os calcis. At the upper end of this incision the anterior half of the tendon was then cut free from the muscle. Close to the insertion of the tendon a small opening was made in the anterior portion of its sheath and the cut end of the half tendon drawn through it so that it was now entirely anterior to the sheath. The posterior surface of the tibia was then exposed by retraction of the flexor longus hallucis and the periosteum divided vertically for 3 inches, down to the lower end of the bone. After reflecting the periosteum sufficiently, a piece of bone, 3 inches long and of the thickness of the half tendon, was removed with a gouge and the tendon laid in the trough thus prepared. When this tendon had been drawn sufficiently taut to produce a slight equinus, it was sewn solidly in place with kangaroo tendon and catgut and completely covered with periosteum. Thus, passive or active dorsiflexion of the foot beyond a slight obtuse angle was made impossible.

The peronei tendons were then transplanted into the os calcis and, finally, a fixation was done on the tibialis posticus tendon to prevent the valgus deformity, the tendon being buried in the internal malleolus. After two months the fixations were quite solid and the peroneal transplantation successful. The part of the tendo achillis still attached to the muscle had regained its normal thickness so far as one could tell. The point of greatest interest, however, was that while dorsiflexion beyond a slight obtuse angle was impossible the patient was able to plantar-flex the foot strongly by the combined action of the calf muscle and the transplanted peronei. Thus the deformity and disability were overcome without interference with the power present. With the assistance of a Whitman plate the patient walks nearly normally.

Archives of Ophthalmology, New Rochelle, N. Y.

January, XLIV, No. 1, pp. 1-108

26 One Hundred Successive Extractions of Cataract in Capsule After
Subluxation with Capsule Forceps. A. Knapp, New York.
27 Purulent Meningitis Following Penetration of Eyeball by Fish-
Hook. C. A. Veasey, Spokane, Wash.
28 Loss of Vitreous in Intracapsular Cataract Operation and Its
Prevention. W. A. Fisher, Chicago.
29 Ophthalmoplegia Interna, Result of Lead Poisoning. L. D. Brose,
Evansville, Ind.
30 Removal of Eyeball. Exenteration Versus Enucleation. H. S.
Gradle, Chicago.
31 Epibulbar Sarcoma with Microscopic and Macroscopic Sections. L. W. Crigler, New York.
32 Two Cases Showing Effect of Syphilis on Injury of Eye. H. H. Stark, El Paso, Tex.
33 Decompression Operations in Diseases of Optic Nerves. A. Bednarski, Lemberg.
34 Idiopathic Iridocyclitis and Sympathetic Ophthalmia. W. Brock, Stuttgart.

Arkansas State Medical Society Journal, Little Rock

January, XI, No. 8, pp. 179-205

35 What Laity and Doctor Should Know About Tuberculosis, and Why. S. E. Thompson, Carlsbad, Tex.
36 Pellagra. H. Thibault, Scott.
37 Medical Examination for Life Insurance. D. Smith, Hope.
38 Corneal Ulcers. D. R. Dorente, Fort Smith.
39 Thoughts Inspired Along Highway of Mississippi County Medical Society. T. F. Hudson, Luxora.

Boston Medical and Surgical Journal

January 28, CLXXII,, No. 4, pp. 121-160

40 Scholarship in Medicine. T. Smith, Boston.
41 Study of Normal-Looking Brains in Psychopathic Subjects. E. E. Southard and M. M. Canavan, Boston.
42 Emergencies of Extra-Uterine Pregnancy at Boston City Hospital. Analysis of Sixty-Two Cases. E. B. Young, Boston.
43 *Lymphatic Leukemia in Acute Infection, After Removal of Spleen. J. M. Jackson and W. D. Smith, Boston.
44 Submucous Resection as Means of Obliterating Superficial Blood-Vessels. J. Prenn, Boston.

43. **Lymphatic Leukemia in Acute Infection After Removal of Spleen.**—Jackson and Smith cite the case of a young man who, a few weeks after removal of the spleen in 1909, showed an essentially normal blood picture. In 1913 he developed what seemed clinically an acute tonsillar infection; this was quickly followed by marked enlargement of the glands of the neck and moderate general glandular enlargement involving axillary, inguinal and epitrochlear glands. This situation was accompanied by a blood picture so typical of lymphatic leukemia that no other diagnosis seemed possible. After a week of sore-throat, general malaise and moderate elevation of temperature the symptoms abated and a normal convalescence as from an acute infection ensued. Blood examinations done from time to time showed a gradual diminution in the white count and a change in the blood picture from that of a typical lymphatic leukemia on June 3, 1913, to an approximately normal picture on Aug. 23, 1913, and a normal picture on April 15, 1914.

Bulletin of Johns Hopkins Hospital, Baltimore

January, XXVI, No. 287, pp. 1-36

45 *Clinical and Experimental Studies on Injection of Alcohol into Gasserian Ganglion for Relief of Trigeminal Neuralgia. C. M. Byrnes, Baltimore.
46 Animal Calorimetry. G. Lusk, Baltimore.
47 *Variation in Tuberculin Hypersensitiveness During Course of Pulmonary Tuberculosis. J. B. Holmes, Baltimore.
48 *Relation of Sensory Nerves to Inflammation. H. N. Stevenson and M. R. Reid, Baltimore.
49 *Occurrence of Bacterium Welchii (Bacillus Aerogenes Capsulatus) in Dejecta of Children. J. H. M. Knox, Jr., and W. W. Ford, Baltimore.

45. **Injection of Alcohol Into Gasserian Ganglion for Relief of Trigeminal Neuralgia.**—Byrnes' clinical (in fourteen cases) and experimental (on dogs) observations have convinced him that in the treatment of trigeminal neuralgia, a single successful injection of alcohol into the gasserian ganglion is followed by immediate relief of pain and all the symptoms indicative of its complete physiologic destruction. Although a general anesthetic is not administered, the painfulness of the injection is not unbearable or greater than that experienced in making deep intraneural injections. In experienced hands, this form of treatment is without serious risk, and no fatalities have been recorded as a direct result of the injection. Byrnes asserts that in spite of the contentions of Alexander and Unger, injections in man by exposure of the ganglion appear to be unwarranted and lacking in judgment, except in rare cases in which this slight saving of time may determine the immediate result during exposure of the ganglion. If the ganglion is in view or accessible, direct injection might be practiced; otherwise the original

operation for removal or avulsion of the root should be employed. If deep neural injections have been unsuccessful, and repeated attempts to inject the ganglion by the subcutaneous method have failed, Byrnes agrees that an effort might be made to inject through the exposed foramen ovale before resorting to the subtemporal operation for removal.

It has been demonstrated, by fractional injection, that the extent of destruction may be, in a measure, limited to that portion of the ganglion from which the affected nerve-trunk originates; and that not infrequently the corneal fibers can be spread. From the distribution of corneal anesthesia, following partial injections of the gasserian ganglion, it appears that the upper and lower halves of the cornea receive separate innervation. In cases of bilateral trigeminal neuralgia, injection of the ganglion possesses distinct advantages over other methods of radical treatment. Since anatomic continuity is not actually destroyed and the motor nucleus is not directly affected, conditions are most favorable for recovery of motor function; while sensation should be permanently lost if the ganglion is completely destroyed. Thus, by allowing sufficient time for regeneration in the motor root, bilateral ganglionolysis might be safely practiced. Experimental studies appear to indicate that it is not probable that the ganglion can be completely destroyed by a single injection of alcohol. It is Byrnes' opinion, however, that by repeated injections of the ganglion its complete destruction may finally be accomplished. Byrnes has treated fourteen patients. A little more than eighteen months have elapsed since the earliest injection. During this period, six patients who were treated more than a year ago are still free from pain—the longest period of relief being eighteen months. Four patients, treated within the last twelve months of this period have had no return of pain. Three patients in whom only partial injections were obtained, returned for further treatment.

47. **Tuberculin Hypersensitiveness in Pulmonary Tuberculosis.**—The application of the intracutaneous test of Mendel to the study of the course of tuberculin hypersensitiveness in tuberculous human beings is the basis of Holmes' paper. The eight patients examined were all under institutional treatment. The treatment was essentially the same in each case—hygienic and dietetic. All the cases had been diagnosed as actively tuberculous; the conjunctival test had been employed in many. Each patient was carefully examined from time to time, the more frequently when there was reason to believe some change might be present. All were under Holmes' immediate supervision. A record of the temperature of each patient was available at all times, and a chart containing his subjective sensations, as recorded by himself, was available in most cases. The tests were made at intervals of fourteen days. Three injections were usually given at a distance of from 3 to 4 cm. from each other; first the control solution distally, then the tuberculin dilutions in order of strength, the weaker nearer the control. In subsequent tests, an effort was made to avoid the site of earlier application, lest local hypersensitiveness should be induced.

Each individual was tested first for reaction to 1/100,000 mg., or at least to a dilution weaker than that to which it was likely he would react. Subsequent tests were made to include the dilution to which the patient had previously reacted, and one weaker dilution, or one stronger dilution, or both, according to the peculiarities of the case, as shown in previous reactions. Reactions were read after forty-eight hours; the traumatic (control) reaction had faded away by this time, whereas the tuberculin reaction was then at its height. These studies showed that individuals suffering from pulmonary tuberculosis present marked tuberculin hypersensitiveness soon after the clinical onset of the disease. This hypersensitiveness diminishes if they improve and fluctuates or remains stationary, if they do not improve. More advanced cases, in time of exacerbation, present this elevated hypersensitiveness again; it rises or falls, following more or less closely the clinical course of the disease. Toward death, it may rise much higher, and then fall until it fails entirely.

48. **Relation of Sensory Nerves to Inflammation.**—The relation of the sensory nerves to inflammation is an unsettled question. It is generally believed that an area deprived of its sensory nerve-supply is more susceptible to injury, but recent observations tend to show that the inflammatory reaction in such an area is beneficially modified. The definite results of Bruce and Januschka indicating an amelioration of the inflammatory reaction, as contrasted with the generally accepted idea that there is an increased susceptibility to injury in parts deprived of their sensory nerve-supply, led the authors to repeat in part their experiments. With the sensory nerve-endings eliminated by degeneration an inflammatory reaction was produced by Stevenson and Reid with mustard-seed oil, which was identical with that shown in the control while it lasted, but which subsided more rapidly than in the control and returned more quickly to normal. Cantharides plaster produced inflammation in anesthetic areas in which the sensory nerve-endings had degenerated. This reaction was identical with that observed in the control areas. In areas in which local anesthesia was produced, a definite inflammatory reaction was produced by mustard-seed oil. Morphin and chloral modified the inflammatory reaction to mustard-seed oil in the eye, but probably not through their action on the sensory nerve-endings.

49. **Bacterium Welchii in Dejecta of Children.**—In 18 children suffering from minor ailments but without marked derangement of the intestinal tract, *Bacillus aerogenes capsulatus* was isolated by Knox and Ford on the first examination, in nine cases. The original milk tubes showed characteristic reactions, the rabbits revealed gaseous edema on inoculation and positive cultures were obtained from the organs and tissues. In nine other cases the organism was not obtained on the first trial, but subsequent examination revealed it in all instances. In some of the cases the majority of the milk tubes inoculated had a characteristic appearance at the end of twenty-four to forty-eight hours. In two cases the first examination was negative, but material was not available for a second trial. In 7 breast-fed infants from the obstetric ward the dejecta from 6 were negative for the "gas-bacillus" reaction, although 15 to 20 tubes were inoculated with material from each case. In one instance, however, one milk tube in the series inoculated gave positive results. In this case the possibility of contamination can be excluded. It is evident to the authors, from the results of their inquiry, that *B. aerogenes capsulatus* must be regarded as a normal and constant inhabitant of the intestinal tract in children except in breast-fed infants.

Canadian Medical Association Journal, Toronto

January, V, No. 1, pp. 1-84

50 Liver in Its Relation to Operations on Biliary Tract and Stomach. G. W. Crile, Cleveland.
51 Pelvic Inflammation. A. L. Lockhart, Montreal.
52 Some Elementary Features of Roentgen-Ray Diagnosis of Gastric Carcinoma, Gastric Ulcer and Duodenal Ulcer. R. D. Carman, Rochester, Minn.
53 *Congenital Dislocation of Hip. C. L. Starr, Toronto.
54 Sporothrix Bearing Some Resemblance to Sporothrix Beurmanni. G. E. Learmonth, High River, Alberta.
55 Glaucoma. P. G. Bell, Winnipeg.
56 Carcinoma of Breast in Man with Apparently Healed Miliary Tuberculosis. L. B. Robertson, Toronto.

53. **Congenital Dislocation of Hip.**—Starr claims that about 75 per cent. of the cases under 8 years of age coming under his observation can be reduced by manipulation, and a perfect anatomic and functional result obtained. In possibly a small percentage of cases the head is not retained in the acetabulum but slips forward as an anterior transposition, giving what may be called a functional cure but not an anatomic one, the chief defect being a small amount of shortening which necessarily remains. In some 5 per cent. of cases it has been found necessary to make the reduction by operative means. The chief hindrances to the reposition of the head as found in such operation, has been the thickened and contracted condition of the capsule. By making a free crucial incision through the anterior portion of the capsule,

a grooved instrument, similar in character to a shoe spoon, may be introduced, the end of the instrument reaching the margin of the acetabulum, and the head of the femur may be "skidded" along this hollow into the socket.

Florida Medical Association Journal, Jacksonville

January, I, No. 7, pp. 193-224

57 Syphilis of Innocent. J. L. Kirby-Smith, Jacksonville.
58 Directions. U. S. Bird, Tampa.
59 Character of Infant Stools. W. C. Page, Live Oak.
60 Human Case of Glanders. L. A. Peek, West Palm Beach.
61 Treatment of Drug Addictions. M. B. Herlong, Jacksonville.
62 Toxemia: Some Points on Etiology and Symptoms, with Deductions. C. G. Roehr, Fort Pierce.
63 Epileptic Child. D. C. Main, Welaka.

Georgia Medical Association Journal, Augusta

January, IV, No. 9, pp. 257-284

64 *More Rational Methods of Treating Aural Diseases. D. Roy, Atlanta.
65 Sluder Tonsil Operation. H. H. Martin, Savannah.
66 Tobacco Amblyopia. A. W. Stirling, Atlanta.
67 First Aid to Injured Eye. A. M. Mason, Waycross.
68 Convenient Face Shield for Nose and Throat Work. C. Stockard, Atlanta.
69 Mastoid Operation Without Artery Forceps or Ligatures. J. J. McLoone, Phoenix, Ariz., and R. M. Nelson, Atlanta.
70 Higher Education in Surgery. E. H. Bradford, Boston.

64. Abstracted in The Journal, May 9, 1914, p. 1500.

Journal of Cutaneous Diseases, New York

January, XXXIII, No. 1, pp. 1-72

71 *Germicidal Activity of Chrysarobin and Other Medicaments Used in Psoriasis. J. F. Schamberg, J. A. Kolmer and G. W. Raiziss, Philadelphia.
72 Primary Epithelioma of Hand. H. Fox, New York.
73 *Metabolism Study of Case of Chronic Urticaria. J. Rosenbloom and M. C. Cameron, Pittsburgh.

71. **Germicidal Activity of Chrysarobin.**—The authors summarize the results of their investigations as follows: Chrysarobin, as regards its influence on the *Staphylococcus pyogenes albus,* in the test-tube and in the bodies of animals fails to exert any appreciable germicidal effect. Sodium chrysophanate possesses no germicidal action in the test-tube on the said staphylococcus in saturated aqueous solution within a period of fifteen minutes. Intravenous injections of considerable doses exert no restraining influence on the formation of abscesses in the viscera when simultaneous intravenous injections of the *Staphylococcus aureus* are given. Sodium chrysophanate, when administered intravenously to white rats previously infected with the *Trypanosoma lewisi,* exerts no perceptible influence on the motility or viability of the trypanosomes.

Pyrogallic acid fails to inhibit the *Staphylococcus albus* except when the concentration is greater than 1 in 10 or 10 per cent. In doses of 1 to 10 c.c. of a 1 per cent. solution it fails to prevent pyemic abscesses in the viscera when injected with a bouillon culture of *Staphylococcus aureus.* Pyrogallol in increasing doses of 0.5 per cent. solution, given intravenously in white rats, fails to exert an appreciable influence on the motility of trypanosomes. Arsenic, Fowler's solution, in 1 per cent. aqueous solution, possesses no germicidal effect in the test-tube on the *Staphylococcus pyogenes albus,* after fifteen minutes' exposure. Sodium arsenate, in 20 per cent. aqueous solution, likewise has no germicidal effect on this organism, after fifteen minutes' exposure. Fowler's solution (representing 1 per cent. arsenious acid, in quantities of 0.2 to 0.4 c.c. in 5 c.c. of a sterile neutral bouillon), will inhibit 0.1 c.c. of a twenty-four-hour culture of *Staphylococcus aureus* after forty-eight hours' duration. Smaller quantities fail to inhibit. The intravenous administration of six times the average dosage per kilogram of body-weight, of an arsenious-acid solution, does not prevent staphylococci from producing abscesses in the kidneys.

Arsenic appears to exert an inhibitive effect on the number and motility of trypanosomes in the blood of white rats, but the dose required is a relatively large one.

Calomel, in quantities of 0.0005 to 0.001 gm. (1/120 to 1/60 grain) is absolutely germicidal to the cocci contained in 0.1 c.c. of a twenty-four hour broth-culture of *Staphylococcus aureus.* Calomel in 1 per cent. suspension is capable of destroying the cocci of the skin, both on normal skin and psoriatic patches. Chrysarobin under identical conditions fails to exert any appreciable germicidal effect.

73. **Metabolism in Chronic Urticaria.**—The diet given by Rosenbloom and Cameron consisted of 100 gm. protein, 110 gm. fat, 200 gm. carbohydrate and 16 gm. nitrogen, yielding to a total caloric value of 2,225, or 35 calories per kilogram of body-weight of the patient. In three days there was a nitrogen retention of 5.08 gm. The urea nitrogen in relation to the total nitrogen is very low. It should be about 80 to 86 per cent. of the total nitrogen. This low urea nitrogen is no doubt due to some loss of function of the liver. The ammonia-nitrogen, uric acid, acidity and ratio of uric acid nitrogen to the total nitrogen are normal. There was a marked disturbance in the absorption of nitrogen, as the fecal nitrogen in a certain percentage of the total nitrogen intake was about three times the normal. There was no diarrhea, therefore the patient showed a poor ability to absorb nitrogen, no doubt due to some intestinal condition.

The urinary sulphur partition was normal with the exception of the large amounts of neutral sulphur excreted on the first and second days. On the third day, when the neutral sulphur was normal, the ethereal sulphates showed an increased amount. The high neutral sulphur was indicative of a lessened oxidative capacity while the ethereal sulphate is an evidence of increased intestinal putrefaction. The amount of fat in the stool is above normal, showing an inability to absorb the usual amount. This is, also, no doubt indicative of some intestinal condition. The relation between the neutral fat, fatty acids, and soaps of the feces shows a poor ability to digest fats as shown by the high proportion of neutral fat. In the three days there was a loss of 0.04 gm. of calcium oxid and 0.01 gm. of magnesium oxid, which is perfectly normal. The proportion of calcium and magnesium oxids excreted in the urine and feces is also normal.

Kansas Medical Society Journal, Topeka

January, XV, No. 2, pp. 1-36

74 Care of Babies' Eyes. J. H. Johnson, Coffeyville.
75 Is Simple Cataract Caused by Chronic Pyogenic Infection? T. L. Higginbotham, Liberal.
76 Mutilation of Tonsil. J. M. Robinson, Hiawatha.

Maine Medical Association Journal

January, V, No. 6, pp. 197-240

77 Prevention of Blindness from Standpoint of Trachoma, Gonorrhea and Syphilis. H. T. Clough, Bangor.
78 Housing and Its Relation to Climate and Health. E. Nichols, Hebron.
79 Confusing Religion with Medicine. T. J. Stevens, Auburn.
80 Economic Cause of Disease. W. E. Gorgas, Cincinnati.

Medical Record, New York

January 23, LXXXVII, No. 4, pp. 127-168

81 Sympathetic Nervous System and Gastro-Enteric Functions. C. S. Fischer, New York.
82 Surgery of Seminal Vesicles. E. Fuller, New York.
83 What Do We Mean by "The Unfit"? R. T. Morris, New York.
84 Prophylactic and Therapeutic Immunization Against Tuberculosis; Its Possibilities and Limitations. S. H. Von Ruck, Asheville, N. C.
85 *New and Greatly Simplified Method of Blood Transfusion. R. Lewisohn, New York.
86 Myocardial Changes Following Acute Infectious Fevers. W. A. Dickey, Toledo.
87 Modern Roentgen Technic in Treatment of Malignant Conditions. M. W. Johns, Utica.
88 Twilight Sleep in Home. K. F. Junor, Brooklyn.
89 Nasal Tuberculosis. J. Coleman, New York.

January 30, No. 5, pp. 169-210

90 *Senile Paraplegia. Report of Cases. M. A. Starr, New York.
91 Tic Neurosis (Fourth Paper). L. P. Clark, New York.
92 Recent Work in Cardiovascular Disease. L. F. Bishop, New York.
93 Intervertebral Foramina in Man. H. Swanberg, Chicago.
94 Pituitary Extract in Intestinal Paresis. E. H. King, Allston, Mass.
95 Streptococcus Peril. H. F. Langhorst, Elmhurst, Ill.
96 New Visual Lithotrite (Cystoscope and Lithotrite Combined). J. London, New York.

85. **Simplified Method of Blood Transfusion.**—The technic used by Lewisohn is the following: Allow the blood to run through an ordinary cannula into a glass jar, containing 5 c.c. of 10 per cent. sodium citrate solution. While the blood runs into the jar it is stirred with a glass rod to effect a good mixture of blood and citrate solution. The blood is then poured into an ordinary glass funnel, which is connected with the other cannula by a piece of rubber tubing. The whole procedure takes five minutes. Lewisohn has used the method on two patients (transfusions of 300 c.c. and 500 c.c., respectively) without any untoward symptoms.

90. **Senile Paraplegia.**—The condition described by Starr, he says, may occur in anyone after the age of 65, depending on his general strength and vitality. The individual becomes gradually more and more feeble, and notices first an increasing disability in walking, in going up stairs, or in standing for any length of time. This undue weariness goes on to an actual feebleness of movement, no longer compensated for by the use of canes or help, and finally results in a partial paralysis of movement, so that it is with difficulty that the patient moves from room to room or chair to chair, and finally becomes bedridden. In some cases the weakness is attended by a marked ataxia, the incoordination being more extreme than the actual weakness. In some cases pain is a very prominent symptom, felt either on motion only, or on standing, although it may occur spontaneously, and is particularly severe after exertion and toward night. The pain is not infrequently attended by sensations of numbness and tingling, and is always attended by coldness of the feet and legs, and an objective coldness of the surface. Occasionally, however, burning pain has been complained of, even though the surface was felt to be cold.

An atrophic condition of the muscles is very often quite pronounced and is attended by a loss of the mechanical excitability of the muscles to percussion and by loss of the tendon reflexes. The limbs, as a rule, are flabby, cold and blue, showing that the vasomotor condition is below normal, and the circulation sluggish; not infrequently edema occurs when the patient is out of bed. Occasionally a loss of control of the sphincters occurs late in the course of the case. Pain in the back and around the loins, is a frequent accompaniment of senile paraplegia, and gives rise to much discomfort and distress, particularly at night, when it is liable to lead to insomnia. It seems possible to distinguish between certain groups. First, those in which the primary disease lies in the muscles alone. Secondly, in another group of cases, it is evident that there is an active degenerative neuritis present. Thirdly, there are cases in which it is evident that the spinal cord is the seat of the disease.

Missouri State Medical Association Journal, St. Louis

January, XII, No. 1, pp. 1-44

97 *Surgery of Heart. W. C. G. Kirchner, St. Louis.
98 What Knowledge Shall Be Imparted to Laity Concerning Cancer? F. J. Lutz, St. Louis.
99 Adequate Health Work Impossible Under Constitution in Missouri. D. Morton, St. Joseph.
100 Missouri Institute of Public Health. R. H. Jesse, Columbia.
101 Tuberculosis in Childhood. F. C. Neff, Kansas City.
102 *Bronchial Asthma. O. H. Brown, St. Louis.
103 Hemorrhagic Disease of New-Born. J. M. Brady, St. Louis.

97. **Surgery of Heart.**—Regarding the treatment of wounds of the heart Kirchner concludes as follows: Wounds of the heart, especially when accompanied by hemorrhage, should be sutured. When the hemorrhage is confined in the pericardium (hemopericardium) and the pulse is irregular and slow, prompt drainage of the pericardial sac is demanded. An early diagnosis is important, and in case of doubt exploratory pericardiotomy should be performed. The choice of the anesthetic and the manner of administration is important, and in no case should the anesthesia be profound. If the heart, when exposed, stops beating, gentle massage of the organ should be practiced. Unless the opportunity for infection were great, it is better not to establish primary drainage of the pleural cavity. The approach to the heart should be well planned, so that the operation may be performed as quickly as possible.

102. **Bronchial Asthma.**—It is Brown's belief that the symptom complex known as bronchial asthma is due, in the main, at least in many cases, to the following factors: bronchitis; chronic cough; overworked right heart; dilatation of bronchial capillaries, lymph vessels; reflex conditions. On one occasion, when a patient was suffering acutely, Brown gave 1/20 grain of strychnin, and waited for perhaps ten minutes, and there was little or no relief. Then he gave ¼ grain morphin, and much to his relief as well as that of the patient, the breathing almost immediately became easy. A few hours later another attack came on and he gave the morphin first, and there was little or no relief until the strychnin followed. Brown tried these agents repeatedly, sometimes giving one first then the other, but always the results were the same. If the two were given together the relief was prompt, and all but instantaneous. Later he used the drugs by mouth to avert the attacks.

New York Medical Journal

January 30, CI, No. 5, pp. 185-228

104 Modern Bone and Joint Surgery. Report of Cases. A. P. C. Ashhurst, Philadelphia.
105 Intercostal Thoracotomy in Empyema. H. Lilienthal, New York.
106 Endothelioma of Soft Palate. Report of Case. R. H. Ivy, Philadelphia.
107 *Auscultoplectrum; Combined Stethoscope and Percussion Hammer. L. Kolipinski, Washington, D. C.
108 Rectal Clinics in London. J. F. Saphir, New York.
109 Balantidium Coli. A. J. Hinkelmann, Galesburg, Ill.
110 Ether Insufflation Anesthesia (Intratracheal and Intrapharyngeal). J. H. Evans, Buffalo.
111 History of Medical Ethics. G. W. Cook, Washington, D. C.
112 Syncope and Fatal Asphyxia Under Nitrous Oxid-Oxygen. H. C. Luke, New York.

107. **Auscultoplectrum.**—The auscultoplectrum designed by Kolipinski is constructed as follows: The funnel end consists of an Otis urethroscope, size 25 or 26 French scale, with the obturator removed, heavily gold plated; 41 inches or 104 cm. of red or black rubber tubing, 5 m.m. in diameter; an ear piece, a small, acorn-shaped piece of hard rubber, such as is used in a phonendoscope or binaural stethoscope. The length of the whole instrument is 45 inches. A cork is the pleximeter with its narrower end applied to the body. The base of the cork is tapped with the plectrum. This is held by the fingers at its insertion into the rubber tubing, so that the metal tube is allowed a free elastic swing; the hand not being in direct contact with it. When percussing, the rubber tubing is hung about the neck.

New York State Journal of Medicine

January, XV, No. 1, pp. 1-43

113 *Exophthalmic Goiter and Its Treatment. J. Rogers, New York.
114 Early Diagnosis of Congenital Syphilis. C. G. Leo-Wolf, Buffalo.
115 Pitfalls and Mistakes in Diagnosis and Treatment of Syphilis. M. Zigler, New York.
116 *Dysmenorrhea. R. S. Morton, New York.
117 Fractures of Neck of Femur; Its Treatment. J. B. Walker, New York.
118 *Cystitis Colli. H. D. Furniss, New York.
119 Physician. E. E. Harris, New York.

113. Abstracted in THE JOURNAL, May 23, 1914, p. 1685.

116. Abstracted in THE JOURNAL, May 30, 1914, p. 1750.

118. Abstracted in THE JOURNAL, June 6, 1914, p. 1839.

Ohio State Medical Journal, Columbus

January, XI, No. 1, pp. 1-72

120 Scopolamin-Narcophin Narcosis. R. McPherson, New York.
121 Element of Certainty in Diagnosis. J. C. Oliver, Cincinnati.
122 Serum Therapy of Epidemic Cerebrospinal Meningitis in Childhood. A. G. Helmick, Columbus.
123 Cancer of Uterus: Surgical Treatment. U. K. Essington, Newark.
124 Health Problems Which Physicians Must Solve. G. E. Robbins, Chillicothe.
125 Effective Control of Trachoma Outbreak in Two Industrial Plants. M. A. Campbell, Columbus.
126 Program of New Ohio Bureau of Juvenile Research: Its Aims and Possibilities. T. H. Haines, Columbus.

United States Naval Medical Bulletin, Washington

January, IX, No. 1, pp. 1-178

127 Shock, Anoci-Association and Anesthesia. A. M. Fauntleroy, U. S. Navy.
128 Proposed Personnel, Organization and Equipment of Hospital Ship. E. M. Blackwell and O. G. Ruge, U. S. Navy.
129 Application of Wassermann's Reaction to Solution of Etiology of Tropical Ulcerations. C. S. Butler, U. S. Navy.
130 *Some Theories as to Origin of Jackson's Veil. J. M. Lynch, U. S. Navy.
131 Résumé of Etiologic Factors Concerned in Yellow Fever. C. B. Camerer, U. S. Navy.
132 Examination of Recruits. J. J. A. McMullin, U. S. Navy.
133 Experience of Surgeon During Occupation of Vera Cruz. G. T. Vaughan, U. S. Navy.
134 Experiences with Marine Expeditionary Force in Mexico. R. M. Little, U. S. Navy.
135 Treatment of Chronic Posterior Urethritis. G. T. Smith, U. S. Navy.
136 *New Method of Examining Stools for Eggs. C. M. Fauntleroy and R. Hayden, U. S. Navy.
137 Yellow Fever Which Prevailed on Board United States Ship *Jamestown* in 1866-67 at Panama. W. M. Kerr, U. S. Navy.
138 Card Index of Specific Cases. R. B. Henry, U. S. Navy.
139 Otoscope as an Anterior Urethroscope. W. G. Steadman, Jr., U. S. Navy.
140 Report Concerning Heliotherapy and Ionic Medication as Employed at Las Animas, Colo. C. J. Holeman, U. S. Navy.
141 Compound Comminuted Fracture of Skull. T. W. Raison, U. S. Navy.
142 Case of Reamputation of Leg. R. Spear, U. S. Navy.
143 Tenoplasty for Contracture of Hamstring Tendons. R. R. Richardson, U. S. Navy.
144 Neosalvarsan and Mercury in Unilateral Luetic Palsy of Abducens. S. Walker, U. S. Navy.

130. **Theories as to Origin of Jackson's Veil.**—Against the theory of the inflammatory origin of these membranes, Lynch says, are the regularity of situation of the blood vessels, which usually run about a centimeter apart, and the serous surfaces moving one over the other with a fluid between. If due to inflammation, adhesions would take place between the two serous surfaces, as in pleurisy. His conclusions are: 1. The membrane described by Jackson is of embryonal origin, but it may be so altered by inflammation as to appear like an ordinary adhesion. 2. There are unquestionably adhesions of inflammatory origin, due to perityphlitis and pericolitis; these membranes should not be mistaken for those of Jackson, as there are many points of difference. 3. Kinking or malformations are due to improper fixation or rotation; and the length of the mesentery has a great deal to do with the kinking of the ileum.

136. **New Method of Examining Stools for Eggs.**—Fauntleroy and Hayden's method consists essentially of staining the fecal matter with anilin gentian violet. This solution stains everything on the slide except the eggs. It does not penetrate the membrane about the eggs and they are therefore left in a natural state. None of the other ordinary colored stains will do this. The entire slide with the exception of the real eggs is stained violet. This method of examination has been used in the examination of over a thousand stools with uniform success. All eggs, hook-worm and others, stand out very clearly and beautifully. About 2 gm. of the fecal material are thoroughly mixed with 5 c.c. of a 2 per cent. aqueous solution of compound solution of cresol in a centrifuge tube. The specimens are centrifugalized at high speed for one minute, the supernatant liquid is then decanted and fresh compound cresol solution added and mixed with the sediment in the tubes. This operation is repeated three times. On completion of the centrifugalization process a small portion of the bottom sediment is removed with a clean pipette and placed on a clean slide, a small drop of anilin gentian violet mixed with the sediment, and a clean cover-glass placed on it.

Wisconsin Medical Journal, Milwaukee

January, XIII, No. 8, pp. 297-332

145 Medical Ideals. V. C. Vaughan, Ann Arbor, Mich.
146 Social Insurance and Medical Profession. J. R. Commons, Madison.
147 Socialization of Medicine. W. F. Zierath, Sheboygan.
148 Status Lymphaticus. D. Hopkinson, Milwaukee.
149 Modern Illumination and Its Relation to Ocular Comfort. N. M. Black, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

January, IX, No. 1, pp. 1-50

1 *Early Pulmonary Tuberculosis in Childhood. K. Fraser.
2 Indications for Surgical Intervention in Pulmonary Tuberculosis. H. M. Davies.
3 Laryngeal Tuberculosis. H. Barwell.
4 Domiciliary Treatment of Tuberculous Patients. G. B. Dixon.
5 Discipline and Recreation in Sanatorium. W. J. Cox.
6 Apparatus and Technic for Production of Artificial Pneumothorax. T. D. Lister.

1. **Early Pulmonary Tuberculosis in Childhood.**—Fraser's communication is based on an analysis of the results of an investigation, clinical and otherwise, into certain important points in connection with 296 cases of pulmonary tuberculosis (mostly incipient) among schoolchildren attending elementary schools. Fraser found that the commencement of school life has a prejudicial effect on children predisposed to pulmonary tuberculosis. Inadequate increase of weight is very suspicious, and that weight and nutrition should not be considered independently. Defective nutrition is probably the earliest indication of a tuberculous infection, before any recognizable physical signs are present. Night sweating is only significant when the sweats are heavy and characteristic. It was present in 55.8 per cent. of the cases, being heavy in 10.2 per cent. A persistent hard, dry cough is the most suspicious type of cough. It was present in 134, or 45.3 per cent., of the cases. In nearly every case one or other apex is affected, and the right apex is most often the first clinically recognizable focus. In only one case (0.3 per cent.) was neither apex involved; the apices of both lungs were affected (with or without some other part or one or other lung) in 221 cases (76.8 per cent.).

Dulness is almost invariably present over the affected lung (95.3 per cent.). Inequality of the breath sounds is a very early indication of trouble; the duration of this is short, and it is usually succeeded by bronchial breathing, which is nearly always present and which remains indefinitely. Friction and fine crepitations are the most significant accompaniments; and all accompaniments when persistent, and especially if localized, are suspicious. Spontaneous improvement is more common in girls than in boys; from the sixth year the tendency to spontaneous improvement increases year by year; and children in rural areas show a very much greater tendency to spontaneous improvement than children in urban areas.

British Medical Journal, London

January 16, I, No. 2820, pp. 101-144

7 Mechanical Treatment of Compound and Suppurating Fractures Occurring at Seat of War. R. Jones.
8 Bactericidal Action of Collosols of Silver and Mercury. C. R. Marshall and G. B. Killoh.
9 *Collosol Argentum* and Its Ophthalmic Uses. A. L. Roe.
10 Insects and War: Mosquito. A. E. Shipley.
11 Relation Between Chemical Structure and Pharmacologic Action. J. M. Fortescue-Brickdale.
12 Case of Bilateral Optic Neuritis Due to Sphenoidal Sinusitis. A. A. Bradburne.
13 *Effect of Daylight and Drying on Human and Bovine Types of Tubercle Bacilli. L. Findlay and W. B. M. Martin.
14 Localization of Foreign Bodies by Means of Roentgen Rays. H. Mowat.

13. **Effect of Daylight and Drying on Tubercle Bacilli.**—It is stated by Findlay and Martin that the bovine type is distinctly more susceptible to the prejudicial effect of ordinary atmospheric influences (daylight and drying) than is the human type of tubercle bacillus. This difference between the types may in part explain why aerial infection with the bovine type is so infrequent in human beings.

Dublin Journal of Medical Science

January, III, No. 517, pp. 1-80

15 Influence of Science on Modern Medicine. J. T. Wigham.
16 Duty of Dental Profession to State in Relation to War. A. W. W. Baker.
17 Great European War. T. E. Gordon.

Indian Journal of Medical Research, Calcutta

October, II, No. 2, pp. 405-669

18 Malaria in New Province of Delhi. E. C. Hodgson.
19 Endemic Malaria of Jeypore Hill Tracts of Madras Presidency. E. L. Perry.
20 *Examination of Peripheral Blood of Kala-Azar Patients. W. S. Patton.
21 Progress of Kala-Azar in Localized Community. F. P. Mackie.
22 *Some Bodies of Unknown Nature Found in Feces of Kala-Azar Patients. F. P. Mackie.
23 Cinchona Derivatives Inquiry. A. C. MacGilchrist.
24 Salivary Secretion of Commoner Blood-Sucking Insects and Ticks. J. W. Cornwall and W. S. Patton.
25 Culturable Free Living Flagellate and Determination of Lethal Value of Certain Chemicals Thereon. G. C. Chatterjee.
26 Simultaneous Occurrence of Cholera and Cholera-Like Vibrios in Tissues of Cholera Patients. E. D. W. Greig.
27 Hemolytic Action of Indian Strains of Cholera and Cholera-Like Vibrios. E. D. W. Greig.
28 *Methods of Estimation of Quantity of Organisms in Suspension. W. F. Harvey and H. W. Acton.
29 Suckered Round-Worms from India and Ceylon. C. Lane.

20. Peripheral Blood in Kala-Azar Patients.—Patton has no difficulty in finding the parasite of kala-azar in films of the peripheral blood. The technic employed aims at collecting as *many* of the leukocytes at the end and the sides of the blood film as possible. The film is then deeply stained with Romanowsky's stain and examined, either with a dry objective, or if time is of no particular consequence, the film may be searched with an oil immersion lens. The parasite was found in the first *blood film examined in* 42 of the cases, in the second film in 13 cases, in the third film in 12 cases, in the fourth film in 5 cases, and in the fifth film in 2 cases, in the sixth film in 4 cases, in the seventh film in 1 case, in the eighth film in 1 case, in the ninth film in 2 cases, in the seventeenth film in 1 case, and in the twentieth film in 1 case. Many of the patients were clearly in the early stages of the disease.

22. Bodies Found in Feces of Kala-Azar Patients.—Especial attention has been paid by Mackie to the feces as one of the possible routes by which the specific parasite might escape. On several occasions he has found one, two, or sometimes a small group of bodies which, in size and general morphology, were indistinguishable from leishmania, with such modifications as one might reasonably expect these bodies to assume in feces. In these few isolated cases, the suspicious bodies were generally lying in or on a small mass of mucus, in which, it may be, they were protected from the action of bacteria. Eighty-two cases of kala-azar have been subjected to examination; eight were found to contain the bodies in question in considerable numbers, eight contained a few, and sixty-six were negative. When the fecal material is kept diluted with water, these bodies generally survive the other cellular elements, and in some cases have been seen to persist *with little* change for ten, twelve and even eighteen days. In 9 cases in which "bodies" were found, the patients were diagnosed as "clinically typical" of kala-azar in 5 they were returned as "clinically probable," and in 2 clinical state was "suspicious."

The feces of 26 healthy persons did not show the bodies in question, either in freshly passed mucus or in the dilutions which were examined daily for *six days*. In size they vary from about 2 microns to 4.5 microns, rarely larger, and almost invariably possess one large uniformly-staining nucleus and often a small nodule of azurphil substance generally placed close to the margin. There is always a defined cell wall which is generally seen as a clear margin, but sometimes it is dense enough to give a double contour on focussing. The cytoplasm is either hyalin or contains certain small chromatin-like dots or is marbled or finely vacuolated. In some specimens which resisted decomposition in water for some days, the nuclear network was seen to be very irregular and the internal structure highly complex and pleomorphic. Some bodies appeared in small clumps and were quite round, with a strong double contour and a basophilic nucleus almost completely filling up the cell. These resembled groups of moniliform spores.

28. Estimation of Quantity of Organisms in Suspension.—The methods employed by Harvey and Acton were: (1) Count against red blood corpuscles. (2) Colony production on Conradi-Drigalski plates. (3) Exhaustion of content of suspension by dilution. (4) Inoculation into animals. They conclude that the area of bacterial growth on solid nutrient medium may, other things being equal, be taken as a fair measure of quantity—at all events for the dysentery bacillus. Enumeration against red blood corpuscles and colony production give fairly consistent results when used for the enumeration of bacteria, such as the bacillus of dysentery, in suspension. The estimate obtained by the method of colony production is lower than that given by enumeration against red blood corpuscles. Enumeration by exhaustion gives low counts but the method is useful as a check on other methods. Interval between inoculation and death as a measure of toxicity or of quantity did not, under the conditions of experiment, yield any satisfactory results.

Indian Medical Gazette, Calcutta

December, XLIX, No. 12, pp. 457-496

30 Training of Senior Indian Medical Service Officers in Home Commands. P. Hehir.
31 Studies in Malaria. H. Stott.
32 *Treatment of Suppuration by Pus Inoculations, and Treatment of Pneumonia by Subcutaneous Injections of Patient's Own Blood. V. Nesfield.

32. Treatment of Suppuration by Pus Inoculations.—It is pointed out by Nesfield that the logical vaccine treatment for a suppurating wound, compound fracture, boil, carbuncle or inoperable surface cancer, is to inject the issuing pus when rendered innocuous, as this contains the true toxins derived by the living organism in the living host. At first Nesfield heated the pus, now he treats it for twenty-four hours with 1 per cent. phenol and camphor. Neither camphor, nor weak phenol damage toxins or *antibodies*, nor do they coagulate nor, as far as is known, form compounds with tissue juices. Such a vaccine (pus) contains not only the identical infecting organisms, but also active ferments, antibodies and true toxins. The *organisms even in* a twenty-four hour culture are many generations removed from the original infecting organism and have probably developed very different chemical substances *and toxins* and hence are not truly similar to those in the lesion. Nesfield has injected such pus over 1,000 times and has never found an abscess to result. The dose: First day 2 minims, second day 3 minims, third day 4 minims and so on, daily till 17 minim doses have been given. If required 10 minim doses can be given after this on alternate days. Prophylactic dose, 5 minims. The reaction: It is quite ordinary to get *induration* at the site of injection, and for the temperature to rise 1 or 2 degrees. This should not be feared.

Journal of Tropical Medicine and Hygiene, London

January 1, XVIII, No. 1, pp. 1-12

33 Sigmoid Flexure in Health and Disease. J. Cantlie.

Lancet, London

January 16, I, No. 4768, pp. 115-170

34 Estimation of Physique and Stamina for School Purposes. A. A. Mumford.
35 *Frost-Bite. A. W. Mayo-Robson.
36 Results of Clinical Investigations Based on Methods of Abderhalden. J. O. Gavronsky.
37 Roentgen Ray Diagnosis of Chronic Cerebral Abscess. W. Glegg and H. Black.
38 Some Cases of Gunshot Fracture. J. J. Clarke.
39 Pellagra in Antigua. W. M. McDonald.
40 *Effect of Calcium Chlorid on Hemolysis Occurring in Vivo. W. W. C. Topley and S. G. Platts.

35. Treatment of Frost-Bite.—Mayo-Robson emphasizes that in the treatment of frost-bite it is of the utmost importance to save as much of the injured extremities as possible, and as it is impossible to say how much of the damaged tissues will survive, immediate or early amputation is absolutely contra-indicated. The best treatment at first is friction with snow or cold water in a cold room, the changes to a warmer atmosphere being gradually brought about. Frictions with turpentine and oil or with spirit and soap liniment are useful remedies in the early stage, and after the friction the limbs should be raised on pillows and swathed in cotton-wool, which can be held in position by bandages applied loosely so as to avoid any danger of constriction. If blisters form, or discoloration of the toes or other parts shows that gangrene is probable, the whole foot should be sterilized by rubbing with oil of turpentine to cleanse the skin or with spirit containing 1 in 500 biniodid of mercury, after which strips of sterilized double cyanid gauze should be applied between the toes and the same gauze made to cover the whole foot, which is then enveloped in sterilized cotton-wool. Any blisters—which will be found to contain dark blood stained fluid—should be snipped and carefully dried and dressed with the spirit and biniodid lotion. Painting the foot with tincture of iodin would probably be quite as effectual, as an antiseptic, as the spirit and biniodid solution.

Every effort should be made to keep the parts dry and sterile, and if gangrene occurs the surgeon should on no account make too great haste to amputate, as the tissues adjoining the line of demarcation become more and more healthy and the line of granulation tissue between the dead and living tissues, if kept aseptic, gives rise to little discharge and can be kept aseptic by a daily dressing with the spirit solution. Ultimately, when it is seen what flaps of skin are available, the dry, shrivelled gangrenous parts can be removed and the bones severed at such points as will allow the flaps to be conveniently applied to make a good cover to the stump. Cases in which the gangrenous process has only involved the superficial layers of the skin, the separation of the necrosed part should be left to Nature and afterward skin grafting will be found useful. If as the result of neglect or the use of wet dressings the gangrene has assumed the moist variety and the wounds are infected, the spirit dressings will still be useful, and the foot should be well dusted with equal parts of zinc oxid and boric acid, so as to make every effort to convert the moist into dry necrosis, and thus to avoid general septic complications and the danger of the gangrene spreading.

40. **Effect of Calcium Chlorid on Hemolysis.**—The experiments described by Topley and Platts afford no evidence of any protective influence being exerted by calcium chlorid on the red cells of animals subjected to the action of a specific hemolytic serum, though this salt serves to inhibit the lysis of the same cells by the same serum in test-tube experiments. Conclusions as to the therapeutic value of this and similar salts based on in vitro experiments must therefore be held to be invalid.

Annales de Médecine et Chirurgie Infantiles, Paris

December, XVIII, Nos. 16-24, pp. 537-572

41 Winter Health Resorts Still Available in Europe. (Ou envoyer cet hiver nos petits malades?) E. Périer.

Bulletin de l'Académie de Médecine, Paris

December 29, LXXII, No. 42, pp. 433-462

42 Horse Serum to Arrest Hemorrhage. Leclercq and Roussel.
43 Colloidal Metals Contra-Indicated in Typhoid. (Les métaux colloidaux—ferments métalliques—sont contre-indiqués dans le traitement de la fièvre typhoide. Leurs indications à propos de quelques incidents de la maladie.) A. Robin.
44 *Rest for Marching Troops. (Un moyen de délassement pour les troupes en marche.) M. de Fleury.
45 *Heart Disease among the Troops. (Les maladies du cœur aux armées.) C. Fiessinger.
46 Localization and Extraction of Foreign Metallic Bodies. (Un dispositif tres simple pour le localisation des projectiles par la radioscopie.) Haret, Schlesinger, A. Desjardins, P. Aubourg and Jaugeas.
47 Organization of Typhoid Service in the Military Hospitals at Vichy. J. Castaigne.
48 The Non-Toxicity of the Cerebrospinal Fluid in Tetanus. P. Sainton and Maille.

44. **Passive Ischemia as Means to Overcome Fatigue.**—De Fleury's experience with the troops has confirmed the remarkable relaxation and relief that follow the simple measure suggested by Jacquet. He calls it the biokinetic method of resting; it aims to expel the blood from the legs by raising them. The men take off their shoes and lie on the ground close to a wall or tree and raise their legs against the wall to a right angle with the body. In this attitude the toes, ankles and knees are worked. If the shoes are not taken off, the benefit is less, but even then the refreshing influence of this transient ischemia is notable. The head should be raised as on a pillow. A body of men apparently entirely exhausted recuperate their energies with five, ten or fifteen minutes' exercise of this kind, the rest and the flood of blood which pours into the tissues as they get up.

45. **Heart Disease Among the Troops at the Front.**—Fiessinger has twelve patients with chronic heart disease who volunteered to go to the front, and who keep themselves in good condition with very small doses of digitalis three days in the week as a preventive measure, and for ten days at a time, with four-day intervals, when compensation is failing. Six with a mitral affection have thus kept up with the campaign to date. One young man with aortic insufficiency forgot to take his digitalis and had to be sent home. Another with aortic insufficiency serves in the aeroplane corps, and there has been no aggravation of the valvular trouble although he had one severe fall, dislocating his shoulder. (See also Paris Letter, page 524.)

Presse Médicale, Paris

December 24, XXII, No. 81, pp. 741-748

49 Localization of Bullets. (Localisation précise des projectiles par la radioscopie.) Jaugeas, Haret and Schlesinger.
50 Applied Anatomy of the Arm. (Une page d'anatomie chirurgicale.) A. Broca.

December 31, No. 82, pp. 749-756

51 *Drug Addiction in Wartime, with Supply of Drugs Cut Off. (Les toxicomanes et la mobilisation.) M. Briand.
52 **Epinephrin in Typhoid.* E. Sergent.

January 7, XXIII, No. 1, pp. 1-8

53 *Infant Hygiene and Medical Care. (Chaire d'hygiène et de clinique de la première enfance; leçon inaugurale.) A. B. Marfan.
54 **Diagnosis of Typhoid among the Troops.* A. Orticoni and P. Ameuille.

51. **Drug Addiction in France After the Mobiliz**
Briand relates that numbers of young women have cc
treatment for drug addiction since the war began, as th
from whom they used to buy their morphin or cocain
gone to the front and they are unable to find others to s
them or they have no money to buy the drugs now tha
short supply has raised the price. In many cases fri
have persuaded the drug addicts that now is the chance
them to take a course of treatment; in other cases the
turbance from lack of the drug has been such as to
them in the hospital. In analyzing the cases he finds sev
in which the habit was started by a physician's prescrip
or by a nurse against the physician's orders. Briand
tells of drug addicts among the troops whose enthusia
under the colors has tided them along through the first sta
after deprivation of their accustomed drug and they are
well on the way to a complete cure of their addiction. O
man, an alien, enlisted while under the influence of morph
and now demands to be dismissed as he was not responsibl
at the time.

52. **Epinephrin in Typhoid.**—Sergent has long proclaimed the important part played by the suprarenals in typhoid fever; they seem to be affected early and suffer severely from the typhoid toxin, as is manifest in the prostration and low blood pressure which form such a dangerous element in the typhoid syndrome. The cardiovascular derangement is often the direct cause of death; it can be best combated by supplying systematically the active principle of the suprarenals. It should be given early without waiting for serious symptoms to develop; he gives it twice a day in small doses and thinks that it would prove a great aid also for the severely wounded, tiding them past the first tendency to collapse.

53. **Hygiene and Medical Care for Infants.**—This lecture opened the newly organized course on this subject at the Paris medical school, the authorities now realizing the importance of caring for the generation that is to replace the losses in war. Marfan remarked that he has no *chef de clinique*, no *chef de laboratoire* and that the laboratory is scarcely working at all, while he has numerous military duties to perform, but with the aid of four women physicians he enters confidently on this new work at the Hôpital des Enfants-Malades with its affiliated day nurseries and "infant consultations." His guiding principle is always that nearly

all of the affections which prove fatal among young infants are avoidable. Even pneumonia is much less fatal in infants who are not debilitated by preceding digestive disturbance or constitutional weakness. The four great enemies with which we have to contend are congenital debility, inherited syphilis, digestive disturbance and improper feeding. The first two should be warded off by appropriate measures before the child is born or even conceived; the last two by breast feeding. The medical profession thus shows the way not only for practical eugenics but for reducing infant mortality to the minimum. It is the physician's task to keep pointing the way, striving in each individual case to keep as close to the ideal as possible. No one can take the place here of the practiced physician, no devotion on the part of the laity can compensate for medical guidance in each case, correcting errors, overcoming prejudices, etc., teaching hygiene based on the knowledge of the pathology of the infant. Many young physicians, he added, are graduated without proper knowledge in this line although every facility is offered them in the curriculum but the courses in obstetrics and pediatrics are elective and hence are too often neglected by the students.

Hygiene and pathology are closely united at this age; the slightest infraction of the laws of hygiene brings an upset, while the adult often apparently escapes the penalty. The intensity of the reaction to infection and the tendency for it to become generalized are peculiarly marked in infants, especially the tendency to spread by way of the lymphatics. The lymphatics are exceptionally permeable but the lymph glands are unusually well fitted to arrest the invading process. Another special feature of the pathology of the infant is that any local disturbance upsets the general health more completely than in adults.

54. **Early Diagnosis of Typhoid.**—Orticoni comments on the extreme importance of prompt differentiation of typhoid fever in the trenches, remarking that in his corps every case of acute febrile bronchitis yet encountered proved to be typhoid fever. In one case the syndrome simulated appendicitis, in two others cerebrospinal meningitis. In a number of other cases typhoid seemed certain but there was no agglutination and inoculation of animals was negative. The prompt recovery of the men confirmed the harmless character of their transient sickness.

Revue Médicale de la Suisse Romande, Geneva

December, XXXIV, No. 12, pp. 697-752

55 *Partial Fusion of Radius and Ulna. (3 cas de synostose radio-cubitale congénitale.) C. Martin-Du Pan.
56 *Enucleation of the Eyeball. (Notes sur 500 cas d'énucléation oculaire.) J. Gonin.
57 The Cell Count in the Cerebrospinal Fluid. (Procédés de numération des éléments cellulaires du liquide céphalo-rachidien.) E. Cottin.

55. **Partial Fusion of Radius and Ulna.**—Du Pan found by chance this congenital anomaly in three children of 8 and 13, but, as the functional disturbance was slight, no attempt to correct it was made. Study of the literature confirmed the wisdom of abstention as in the five instances in which operative treatment was applied the results were not permanent, the bones growing together again afterward. The muscles, tendons and the joints have adapted their growth to the congenital synostosis, and hence mere separation of the long bones is far from restoring normal conditions.

56. **Enucleation of the Eyeball.**—In Gonin's hospital practice this operation is required for fully 5 per cent. of the eye patients, but the proportion is less in his private practice, as severe injury of the eyes from foreign bodies, explosions and goring accidents is comparatively rare among the well-to-do. The retina had separated in fully 70 per cent. of the 500 cases, but other factors had contributed to the blindness in most of them. He has had all the enucleated eyeballs preserved in gelatin-glycerin for teaching purposes, arranged in sets according to the character and seat of the lesion. He reaffirms from his experience the relative harmlessness of even a considerable loss of the vitreous body when there is no adhesion to the retina; also the frequency of a diffuse retinitis rarely perceptible with the ophthalmoscope; the varying importance of injury of the sclera in regard to detachment of the retina according as the injury is near or remote from the equator of the eye; and, finally, the hitherto unsuspected frequency of detachment of the vitreous body and detachment of the choroid.

Beiträge zur klinischen Chirurgie, Tübingen

XCIII, No. 3, pp. 487-762. Last indexed Feb. 6, p. 518

58 Wounds of the Limbs. (Schussverletzung der Extremitäten.) M. Gerulanos.
59 *Physiology of the Appendix. (Zur Physiologie des Blinddarmanhangs.) B. Heile.
60 Friedmann's Treatment of Tuberculosis. (Zur Bewertung des Friedmann'schen Tuberkulose-Vaccins.) W. V. Simon.
61 Present Status of Experimental Cancer Research. (Krebsforschung.) H. Simon.
62 Xanthosarcomas of Tendon Sheaths and Joints. S. Weil.
63 Influence of Decompressive Trephining on Choked Disk. (Einfluss der Palliativtrepanation auf die Stauungspapille.) R. Brade.
64 Technic for Operations on the Tongue, Throat and Larynx. (Operationen an Zunge, Rachen, Kehlkopf.) A. Tietze.
65 *Operations on the Arch of the Aorta in Dogs. (Operative Ausschaltung des Aortenbogens.) E. Jeger.
66 Wounds of the Lungs. (Zur Behandlung der Stich- und Schussverletzung der Lunge.) Rubsamen.
67 Modified Technic for Transplantation of Bone for Tuberculous Spondylitis. I. Wierzejewski.
68 Technic for Operative Treatment of Spina Bifida and Encephalocele. Pomorski.
69 Resection of the Thymus. Pomorski.
70 Sources of Error in Diagnosing Appendicitis. H. Küttner.
71 *Postoperative Paresis of Stomach and Intestines. (Postoperative Magen- und Darmlähmungen.) A. Peiser.
72 Pancreas Complications after Resection of the Stomach by Billroth II. H. Küttner.
73 Simultaneous Cancer and Ulcer in the Stomach; Two Cases. R. Levy.
74 Prognosis and Treatment of Perforated Gastric Ulcer. Hanck.
75 *Influence of Stagnation of Urine on Development of Pyogenic Kidney Infection. H. Harttung.

59. **Physiology of the Appendix.**—Heile's experiments with dogs having a fistula into the appendix, or studying the functioning of the appendix in other ways, have demonstrated, he asserts, that the musculature of the region, including the appendix, forms a single whole in its muscular action, each element having its share in effectual peristalsis. Besides this muscular action, the walls of the appendix secrete ferments that split albumin and carbohydrates. The cells of the appendix secrete further a hormone.

65. **Operations on the Arch of the Aorta.**—Jeger performed operations on dogs aiming to induce conditions like those necessary in operating on an aneurysm at this point in the human aorta. The technical outcome was fine but the animals so far have succumbed to complications.

71. **Postoperative Paralysis of Stomach and Intestines.**—Peiser cites a recent compilation of 142 cases of acute paralysis of the stomach after an operation, with 52 per cent. mortality. This shows that postoperative paralysis is more common than used to be suspected; in many cases it probably subsides spontaneously. The tendency to it must be greater when the stomach is weak from congenital or acquired causes, and this should be ascertained as a routine measure before operations. A tendency to an unstable nervous system also affords a predisposition. In his experience the working classes are less liable to it than the well-to-do. Deep general anesthesia magnifies any preexisting predisposition and reflex inhibition as the peritoneum is incised. All these factors may cooperate, and extreme thirst after a laparotomy should warn of trouble. Thorough rinsing out of the stomach is the best remedy, possibly supplemented by turning the patient into the prone or knee-elbow position. He reports a case in which the bowel as well as the stomach developed paralysis after a laparotomy for disturbance from adhesions. He believes that a hard purge before the operation invites paralysis later, and urges abundant use of superheated air as a means to promote peristalsis after operations, but never in the form of the hot-air box. This makes too great demands on the heart. The electric hot pad answers the purpose fully without affecting the general condition.

75. **Hydronephrosis and Infection.**—Harttung's long article is profusely illustrated in connection with experiments on sixty-two rabbits in which he threw a ligature around one

ureter. The conditions thus induced invited suppuration in the kidney. When the infection was of ascending origin, the kidney pelvis was involved first and predominantly. With blood-borne infection the cortex suffered most.

Deutsche medizinische Wochenschrift, Berlin

January 1, XLI, No. 1, pp. 1-32

76 *Abdominal Pain. (Leibschmerzen.) J. A. Grober.
77 *Marriage for Women with Nervous or Mental Disease. (Zur Frage der Konzeptionsbeförderung und der Eheschliessung bei Nerven- und Geisteskrankheiten.) E. Meyer.
78 *Ten Years' Experience with Scarlet Fever. (Scharlachstatistik.) H. Barasch.
79 Advantages of Bang's Test for Sugar in Minute Amounts of Blood. (Ueber Blutzuckerbestimmungen in kleinsten Blutmengen.) W. Wolff.
80 Treatment of Venereal Disease at the Front. (Zur Behandlung von Geschlechtskrankheiten.) K. Zieler.
81 *To Ward Off Vermin and Typhus. (Zur Prophylaxe des Flecktyphus.) A. Blaschko.
82 *Prophylaxis of Pneumonic Plague. (Lungenpest.) E. Martini.
83 Hygiene and Comfort in the Trenches. (Die Hygiene in den Deckungen im Stellungskriege.) Feichtmayer.
84 Operative Treatment of Wounds of the Spinal Cord; Twenty Cases. (Rückenmarksverletzungen im Feldlazarett.) Noehte.

76. **Treatment of Abdominal Pain.**—Grober emphasizes anew that the necessity for immediate treatment of emergency conditions should never mislead the physician into being content with superficial action. From the way in which his measures act, he may be able as he supervises the case to guess at the underlying cause which it is his task to seek and root out. Abdominal pain, in particular, may be set up by the most diverse causes; most common, perhaps, is acute catarrhal trouble in the stomach and upper bowel from an error in diet. A gastric ulcer was responsible in a case in a young woman, and sudden invagination or volvulus of the bowel in a boy of 8. In another case the abdominal pain was traced to gall-stones, but tuberculous lesions, ulcerations, typhoid, dysentery, hernia and appendicitis may all set in with abdominal pain as the first symptom to attract attention, likewise female trouble and acute disease of the gall-bladder, pancreas or kidney region. Moist or dry heat to the abdomen and opiates will relieve the pains, probably by the afflux of fresh blood or by its diversion to the skin. A warm sitz-bath and removal of pressure in the abdomen by evacuating the stomach, intestines and bladder aid in relieving the pain. A tendency to nausea can be combated by placing scraps of ice in the mouth, turning the head so the water will run out of the mouth. A few drops of lemon juice on the ice may help. Sherbet and ices in general may be useful in combating nausea, and they deserve more extended use, he says, in the diet for the sick. In giving opiates to relieve the pain, we must not be misled, by the subsidence of the pain under them, to think that the trouble is at an end. With a subcutaneous injection of 0.01 gm. morphin, repeated at need after twelve hours, there is not much danger of masking the true clinical picture. Opium is liable to cause cardiovascular disturbance, the heart beat growing faster and the pulse weaker, with disagreeable sensations in the heart region.

77. **Childbearing and Nervous Disease.**—Meyer presents data which reaffirm that marriage, conception and pregnancy should be strictly warned against in all forms of nervous affections, not only in the interests of eugenics but to save the woman further harm. The hope that marriage and pregnancy may bring about a turn for the better in epilepsy, hysteria, exophthalmic goiter, etc., is very seldom realized; if improvement occurs it is scarcely ever permanent. As a rule, it soon yields to an aggravation of the original trouble. It must be remembered also that dementia praecox may develop at first as merely mild and apparently harmless nervousness, and under the stress of conception may flare up into a serious form. The least harmful from the standpoint of childbearing seem to be the symptomatic psychoses, amentia and the like, but even here an inherited taint should suggest possibility of recurrence under the stress of childbearing.

78. **Scarlet Fever.**—Barasch restricts treatment of scarlet fever to efforts to keep the patient's strength up and spare it all extra tasks, sustaining the body thus in its task of antibody production. Among 1,438 cases at the Urban Hospital at Berlin, 16.1 per cent. developed nephritis; 13.8 per cent. developed otitis; 1.3 per cent. endocarditis, and 5.9 per cent. rheumatism; there was sepsis in 9.1 per cent.; late involvement of the glands in the neck in 33.4 per cent., and in 16.4 per cent. of the total there was complicating diphtheria. The mortality was 15 per cent., but only 6.6 per cent. died later than the first three days after entering. Over half of the deaths were in children under 4. As a rule the hospital gets *only* the severer cases in an epidemic, and consequently the above figures must be regarded as favorable, testifying to the importance of the principles followed. The patients are dismissed at the end of six weeks, and return cases are sometimes encountered. About 150 patients were kept constantly in red light, but no benefit from this was apparent. In the 481 cases of swollen glands in the neck, 14.1 per cent. suppurated.

The sore throat was treated merely with an ice-bag or wet bandage to the neck and gargling with a mild antiseptic. Children too young to gargle had their throats merely wiped out several times a day; this relieved them so much that they generally made no objections after the first. After the first day the children are given a tepid bath every day and adults every second day. To ward off kidney complications, the diet is restricted to saltless food, mostly milk and gruel with apple sauce and raspberry juice. If the children are very hungry, rolls or zwieback with unsalted butter or crackers may be allowed. When there is a distaste for milk, it is given in the form of cocoa. If the kidneys show no signs of trouble by the nineteenth day, one egg is allowed. If this is borne without disturbance, a light mixed diet can be gradually resumed, with constant supervision of the urine. If nephritis develops and there is much blood in the urine, nothing but milk is allowed, or possibly with gruels. If there is not much blood, the milk-gruel diet can be resumed. It is kept up until the urine is free from albumin. The patients are kept always as warm as possible, to ward off nephritis, and are not allowed to leave the bed until the twenty-fifth day after subsidence of the fever, and not even then if there are complications.

81. **Naphthalin to Ward Off Vermin.**—Blaschko advises rubbing the body with 5 per cent. naphthalin-petrolatum to keep body lice away. Or half a teaspoonful of pulverized naphthalin can be shaken into the collar around the neck. It works down from here over the body, or it can be worn in a gauze bag. A little scattered in the bed will drive lice away. Head lice can be combated best by cutting the hair close. These measures against vermin are very important in prophylaxis of typhus, as the transmission of this disease by lice is a well established fact, and they may be concerned in the transmission of other diseases.

82. **Danger of Plague in Europe.**—Martini quotes Gottschlich's statement that he found virulent plague bacilli in the sputum of a man in Egypt the seventy-sixth day after an attack of secondary pneumonic plague. A chronic form of plague persisting for weeks with foci in the lungs has been found in rats on ships. These facts show that plague bacilli may reach Europe notwithstanding the long journey. Pneumonic plague seems to be a winter disease, contagion occurring more readily among the housed, and the bacilli acquiring greater virulence in passing from lung to lung. Fully 50,000 died during the epidemic in Manchuria in 1910 to 1911. When an acute lung disease develops in a robust young man and runs a fatal course in two days, pneumonic plague should be suspected. The sputum is thinner and sprays more readily than with other lung affections. All who have been exposed should be passively immunized; physicians and attendants require active immunization (*Pfeiffer method*). Both are harmless, he declares; he never witnessed any disturbances to mention after subcutaneous injection of a whole, killed, agar culture of Manchurian pneumonic plague bacilli. This was done on a large number of persons. He took the injection himself on two occasions, once with the Haffkine method, and he had considerable disturbance after this.

Medizinische Klinik, Berlin

January 3, XI, No. 1, pp. 1-28

85 *Abdominal Wounds. (Ueber Bauchschüsse.) J. Rotter.
86 Experiences at a Field Hospital. O. Nordmann.
87 *Treatment of Wounds. (Ueber Wundbehandlung.) F. Hammer.
88 Nursing in War. (Ueber die richtige Verwendungsstelle der Krankenschwestern im Kriege.) Riese.
89 *Treatment of Prolapse of Brain Tissue. (Gehirnprolaps nach Schädeldefekten.) O. Orth.
90 Functional Diagnosis of Blood Diseases. (Blutkrankheiten.) L. Hess.
91 *Proportional Leukocyte and Platelet Count. (Klinische Untersuchungen über das gegenseitige Verhältnis der Leukocyten- und Blutplättchenzahlen.) E. Maixner and A. v. Decastello.

85. **Abdominal Wounds.**—Rotter has been making a special study of gunshot wounds of the abdomen, 59 having been encountered in four field hospitals along the Aisne among a total of 1,218 wounded. The corpses found of men dying on the spot from abdominal wounds showed that the mortality from such injuries was fully 90 per cent., and among those living to reach the field hospital it was still 80 per cent. In the clearing hospital it was 40 or 50 per cent., and zero in the hospital in the home zone. The difference between the mortality of abdominal wounds in peace and in war thus is not so great as usually stated. His experience indicates that a spontaneous cure of a bullet wound of the bowel is possible only when the perforation is small, without prolapse of mucosa, or, with prolapse, only when adjacent tissue sticks to the spot and thus serves as a plug to the perforation. The perforation also must be solitary; there is little chance of this plugging process occurring at several points. Another and indispensable condition is that the bowel must be empty at the time it is perforated. In nine operative cases and necropsy of two there was only one case without several holes in the bowel and in this one case the man succumbed to diffuse peritonitis. In none of the other cases could spontaneous recovery have occurred, and consequently treatment should be the same for abdominal wounds under all circumstances, namely, early operative treatment if the case is seen in the first twelve hours after the injury. Later than this, the results of surgical treatment average no better than with conservative measures. Collapse alone need not deter from operating. Conditions as to asepsis, etc., are so good, he says, in the German field hospitals that no one need hesitate on this account. The advantages of operative treatment were illustrated particularly in one case; seven holes in the small intestine were sutured eight hours after the injury; in one place the gut had been severed almost completely. The man made a smooth recovery. In all the nine operative cases two or more holes were found in the bowel, the smallest large enough to insert the finger or thumb. The injury was found beyond repair in three cases, and 5 others succumbed to peritonitis or never rallied from the collapse. Of those given conservative treatment, 20 per cent. recovered, and the course of the cases showed that the bowel wall had not been perforated in most of these.

87. **Treatment of Wounds.**—Hammer emphasizes that the aim in dressing a wound should be to keep away further irritation from without, and keep the part at rest. The germs that have got into the wound require, like all vegetable bodies, a certain length of time to adapt themselves to their new environment; transplanting a plant always checks its growth for a time. The tissues have certain defensive powers which aid in impeding the proliferation of the germs at first. He says that Nature shows us in the scab the ideal to aim for in a dressing.

89. **Emergency Treatment of Prolapse of the Brain.**—Orth has found it of great advantage to close the gap in the skull at once with a periosteum-bone flap, suturing it in place with silk. Even if it is cast off later, it serves its purpose in warding off infection and injury of the brain until the defect can be permanently corrected.

91. **Relations Between the Leukocytes and the Blood Platelets.**—Maixner and Decastello conclude from their clinical and experimental experiences that the number of leukocytes and platelets rise and fall together. No connection with the numbers of red corpuscles was apparent.

Münchener medizinische Wochenschrift, Munich

December 29, XLI, No. 52, pp. 2433-2456

92 *Pneumococcus Tonsillitis. E. Leschke.
93 Disturbance in Growth and Deformity Ten Years after Injury of Wrist. (Wachstumsstörung und Deformitat.) M. Herz (Sydney).
94 Simplest Methods for Examining the Urine for Salt, Nitrogen and Electrolytes. (Bestimmung des Kochsalzes, des Stickstoffs und der Elektrolyte im menschlichen Harn.) K. Wunder.
95 *Etiology of Verrucous Endocarditis. E. Reye. Commenced in No. 51.
96 Tetanus; 174 cases. Madelung (Strassburg).
97 Disturbances in Vision among the Wounded without Objective Findings in the Eyes. A. Bielschowsky.
98 Action of Regular and Dumdum Bullets on the Human Body. M. Kirschner, K. Stargardt, v. Meyer, F. Kraemer and F. Haenisch.
99 *Jet of Air in Prophylaxis of Tetanus. (Zur Verhütung der Tetanusgefahr durch intensive Luftbeströmung.) A. Heisler.
100 *Agglutination Positive after Vaccination against Typhoid. (Typhusschutzimpfung.) Kellermann.
101 *Treatment of Tetanus. Kellermann.
102 Oil from Birch Tar as Substitute for Peruvian Balsam in Treatment of Infected Soft Parts. (Oleum Rusci zur Behandlung infizierter Weichteilwunden.) H. L. Heusner.
103 Snow Blindness. (Schneeblindheit.) Gross.

92. **Pneumococcus Tonsillitis.**—Leschke reports a few cases to show how the pneumococcus may induce what seems to be an ordinary tonsillitis with or without general disturbance, pains in the limbs and depression, suggesting influenza. There is also a type with sepsis. All of these run a longer or more rebellious course than ordinary follicular tonsillitis. The *Diplococcus lanceolatus* is found on the tonsils.

95. **Verrucous Endocarditis.**—In Reye's 23 cases of verrucous endocarditis there was a history of recent acute articular rheumatism in 4 cases; chronic heart disease with articular rheumatism in the past in 5 cases; chronic tuberculosis in 7; chronic nephritis in 2; cancer in 3, and syphilis or pneumonia once each. His bacteriologic examination and inoculation of animals have apparently established that Schottmüller's endocarditis lenta is the later, severer stage of verrucous endocarditis. Both are the work of the *Streptococcus viridans* but only comparatively rarely does it progress to the severe form of the typical "slow endocarditis."

99. **Jet of Air in Prophylaxis of Tetanus.**—Heisler urges the playing of a jet of air on a wound liable to develop tetanus. Hot air is best as it hastens healing, but even a jet of room air from a bicycle pump or electric fan or bellows checks the development of the anaerobic tetanus bacillus.

100. **Agglutination After Antityphoid Vaccination.**—Kellermann has found that the serum of men vaccinated against typhoid gives a positive agglutination reaction; in three cases it was 1 to 200. Hence this test has no differential value in the diagnosis of typhoid under these circumstances.

101. **Hydrogen Dioxid in Treatment of Tetanus.**—Kellermann injected 10 c.c. of hydrogen dioxid directly into the wound following the path of the bullet and the man rapidly recovered under this and serotherapy. As the injection was painful he gave a little morphin beforehand.

Zentralblatt für Chirurgie, Leipzig

January 2, XLII, No. 1, pp. 1-16

104 Arteriovenous Anastomosis of Portal Vein Wards Off Necrosis of the Liver after Ligation of Hepatic Artery; Invariably Successful on Animals. (Die arteriovenöse Anastomosis an der Pfortader als Mittel zur Verhütung der Lebernekrose.) A. Narath.

Zentralblatt für Gynäkologie, Leipzig

December 26, XXXVIII, No. 52, pp. 1513-1576

105 The Round Ligament to Cover Stumps after Removal of Adnexa. (Bedeckung der Stümpfe nach Entfernung von Adnextumoren vermittels der runden Mutterbänder mit gleichzeitiger Fixation der Gebarmutter.) H. Thomson.

January 2, XXXIX, No. 1, pp. 1-16

106 *Exclusive Radiotherapy of Operable Cancer of Uterine Cervix. M. Hofmeier.
107 Woman as a Factor in the Strength of the Nation. (Volkskraft und Frauenkraft.) H. Sellheim.

106. **Radiotherapy Versus Operative Treatment of Incipient Cancer.**—Hofmeier calls attention to the tragic case of a woman of 29 with a small ulceration on the posterior lip of

the cervix of the uterus. The first symptom had been a little bleeding four weeks before the discovery of the cancer. It was so small and accessible that it was treated with radium and the Roentgen rays alone, and the cancer cells seemed to have been destroyed by the course of radiotherapy which lasted seventeen days. When the patient returned two or three weeks later it was found that the cancer was still growing in the depths of the tissues, and the whole was excised, but within four weeks there was recurrence in the pelvic connective tissue. The wasting of five or six weeks on the radiotherapy was of tragic moment for the woman's fate.

Zentralblatt für innere Medizin, Leipzig

January 2, XXXVI, No. 1, pp. 1-16

108 Advantages of the Continuous Bath in Treating Large Open Ulcerations. (Dekubitus und Dauerbad.) R. von Jaksch.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 27, XXXV, No. 138, pp. 3033-3048

109 *Diphtheria of the Skin. (Sulla difterite cutanea.) G. Bertelli.

January 3, XXXVI, No. 1, pp. 1-16

110 *Aleukemic Myelosis. (Le mielosi aleucemiche eritroblastiche dal punto di vista clinico.) G. Ghedini.

109. **Primary Diphtheria of the Skin.**—Bertelli's patient was a physician who had been treating a case of ordinary diphtheria. He had at the time a pimple near the lip and this developed into a true diphtheric lesion from which diphtheria bacilli were cultivated with disturbance of the general health. The throat did not become involved until several days later. Under antitoxin the general symptoms and the involvement of the mucosa retrogressed but the skin lesion did not seem to be affected by it until it was applied locally. Then the false membranes were cast off and recovery was soon complete. Bertelli compares this case with the few cases of cutaneous diphtheria on record.

110. **Aleukemic Myelosis.**—Ghedini describes eight different types and cites from the literature specimens of each.

Pediatria, Naples

January, XXIII, No. 1, pp. 1-80

111 Insufficiency of the Ductless Glands Common with Inherited Syphilis. (*Insufficienza glandolare endocrina ed eredosifilide.*) R. Vaglio.
112 Case of Achondroplasia. E. Palmegiani.
113 *Serotherapy of Epidemic Cerebrospinal Meningitis. G. Rutelli.
114 Skin Tuberculin Reaction in Diagnosis of Tuberculosis in 601 Children. G. Salvetti.

113. **Serotherapy of Meningitis.**—Rutelli declares that serotherapy is the only rational method in treatment of epidemic cerebrospinal meningitis in children. The serum should be injected directly into the spinal canal or cerebral ventricles, and in generous and repeated doses. In case no benefit is apparent, he advises giving a trial to antiparameningococcus serum. In the 18 cases he reports, all in children, all recovered but 3. He made from two to ten injections in the course of one to four weeks. The total amount injected was from 20 to 270 c.c. He calls special attention to 2 cases in which the children recovered under the serotherapy although it was not commenced until the ninetieth day of the disease and the children were extremely debilitated. Also in 5 cases in which the disease was at the fifteenth day when the first injections were made. In 2 others the serotherapy was commenced in three or four days but the children died. He injects about 10 or 20 c.c. of serum for an infant and 30 c.c. for a child 2 years old. In older children he injects a quantity about equal to the amount of cerebrospinal fluid withdrawn.

Policlinico, Rome

Surgical Section, XXI, No. 12, pp. 557-600

115 Bacteriologic Examination of Bones from Cadavers with a View to Transplanting. P. Desderi and G. Serafini.
116 Successful Operative Treatment of Radial Paralysis after Fracture of the Humerus. R. Mosti.
117 Experimental Gastric and Duodenal Ulcers in Twenty-One Dogs after Severing the Sympathetic. R. Brancati. Commenced in No. 11.
118 Spontaneous Perirenal Hematomas. A. Bevacqua.

January 3, XXII, No. 1, pp. 1-40

119 Improved Technic for Examining Urine Sediment. (La fissazione dei sedimenti urinarii agevolata mercè l'impregnazione con siero di sangue umano o con giallo d'uovo e la loro colorazione a secco col "processo rapido" di Pappenheim.) C. Minerbi and W. Vecchiati.
120 *Effectual Treatment of Purulent Pleurisy; Two Cases. (Trattamento della pleurite purulenta, col metodo Kawahara.) T. Silvestri.

120. **Purulent Pleurisy.**—Silvestri has long treated cases of purulent pleurisy by clearing out the pus and rinsing the cavity with air. The procedure is so simple that it is within reach of every practitioner. The instrument used has two openings and air flows in as the fluid is drawn out, so there is no sudden change in pressure inside the chest. The air bubbling through the pus in the chest renders it less viscid and it can thus be drawn out more readily, without necessity for diluting it with fluids introduced from without. Silvestri has been using this method since 1896, but an account of it was published first by another, so it goes by the name of Kawahara's method. He describes here two typical cases, one in a boy and one in a man of 49, to illustrate the advantages of the method. He uses the Potain apparatus, pumping in more air at need to soften up and loosen the pus in the cavity.

Grèce Médicale, Athens

December 1 and 13, XVI, No. 23-24, pp. 45-48

121 Carbon Dioxid Snow in Treatment of Condylomas; Ten Cases. (L'acide carbonique solide dans le traitement des condylomes acuminés ou crête de coq.) N. P. Voulièris.

Brazil-Medico, Rio de Janeiro

December 15, XXVIII, No. 47, pp. 429-436

122 Brazilian Species of Trichosomas. (Sobre as especies brazileiras do genero Capillaria Zeder, 1800.) L. Travassos.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 16, pp. 1045-1124

123 Colloidal Nitrogen of the Urine in Diagnosis of Cancer. (De kolloidale Stikstof van de urine.) P. de Bloeme, S. P. Swart and A. J. L. Terwen.
124 Roentgen Treatment of Tuberculosis of the Lymph Glands. H. Verploegh and C. L. W. Ruys.
125 Medicinal Treatment of Senile Cataract. (Behandling van ouderdomsstaar met geneesmiddelen.) P. J. Waardenburg.

No. 17, pp. 1125-1196

126 Hypertrophy of the Prostate. I. H. Kuijjer and D. Schoute.
127 Hygiene of Sitting Posture. (De leuning met twee-armigen hefboom als middel tot verbetering van de hygiene van het zitten.) A. Lorenz.

No. 18, pp. 1405-1480

128 Modern Superstitions. II. (Hedendaagsch Mirakelgeloof.) G. van Rijnberk.
129 Acute Myelogenous Leukemia. W. H. Van Os.

No. 19, pp. 1481-1567

130 Theoretical Study of Emmetropia. G. J. Schoute.
131 Present Status of our Knowledge in Regard to Hare-Lip and Similar Deformities. (Hazenlip en scheeve gezichtsspleet volgens nieuwere onderzoekingen.) J. A. J. Barge. Commenced in No. 18.
132 Pseudo-Diphtheria Bacilli. C. M. Mol. Commenced in No. 16.

Nordisches medizinisches Archiv, Stockholm

XLVII, Internal Medicine Nos. 1-4. J. G. Edgren Festschrift

Edgren Festschrift.—The sixty-fifth birthday of the professor of internal medicine at the University of Stockholm was celebrated by the presentation of this special and bulky volume of the *Archiv*. The title page states that it represents Nos. 1 to 4 of the 1914 issue of the medical section and Nos. 1 and 2 of the 1915 volume. It contains thirty-three articles by his friends and former pupils. All of them are either written in German or accompanied by a long German summary, with the exception of one article in French and one in English.

133 *The Red Corpuscles in Advanced Pulmonary Tuberculosis, Especially in Regard to Amyloid Degeneration. A. Gullbring.
134 Aneurysm of the Aorta Simulating Spinal Tumor. F. Kaijser.
135 Deformity of All the Finger Nails and Toe Nails, Developing Age of 17. (Onychogryphosis.) J. Strandberg.
136 Spinal Cord Tumor. (Rückenmarkstumor.) G. D. Wilkens.
137 Paratyphoid B Epidemic. A. C. Nilsson.
138 *Segmental Innervation of the Abdominal Muscles. (Quelle est l'innervation radiculaire des muscles abdominaux?) G. Söderbergh.
139 Alcohol and Epilepsy. C. Sebardt.
140 Traumatic Neuroses. J. Billstrom.

141 Purpura with Hemorrhagic Vesicles in Boy of 10. H. Lindvall.
142 *Variations in Growth and Virulence of Cholera Virus. P. G. Olsson.
143 Contribution to the Question of the Teratomata: Case of Epignathus. C. F. Heijl.
144 Shape of the Posterior Surface of the Human Cornea. (Form der hinteren Hornhautfläche.) W. Nordenson.
145 The Nitric Acid Test for Albumin. (Heller's Albuminprobe.) C. Cronquist.
146 Plague at Stockholm about the Seventeenth Century. (Pest während der Jahre 1657 und 1710.) K. Linroth.
147 *Examination of the Lungs. (Einige Hauptzüge der gewöhnlichen Lungenuntersuchung.) C. E. Waller.
148 *Acute Intoxication with Veronal. K. Mattisson.
149 Mixed Tumors in the Mediastinum. (Mediastinala blandningssvulsterna.) F. Lindstedt.
150 Content of Blood not Always an Index of Absorption of Sugar. (Zuckerresorption und Blutzuckerspiegel.) G. Bergmark.
151 *Treatment of Dangerous Hematemesis. (Om behandlingen af lifsfarliga magblödningar.) H. Lindberg.
The Changes in the Cortex of the Brain with General Paresis. (Om forändringarna i störa hjärnans bark vid paralysie générale.) H. Marcus.
153 *Treatment of Abscesses in the Lungs. (Behandlung eitriger Lungenaffektionen.) H. C. Jakobæus.
154 Congenital Stridor. (Der infantile Larynxstridor.) W. Wernstedt.
155 Case of Associated Splenomegaly, Anemia and Infantilism. L. Wolff.
156 Symmetrical Cyanosis of the Hands and Feet; Cure under Thyroid Treatment. (Acrocyanosis — Schilddrüsentherapie—Genesung.) A. Josefson.
157 Vital Staining of the Red Corpuscles. (Om vitalfärgning af röda blodkroppar.) O. Lindborn.
158 *Diagnosis and Treatment of Sagging Stomach. (Gastroptosens diagnos og behandling.) A. Troell.
159 Salvarsan in Treatment of Mercurial Stomatitis. J. Almkvist.
160 Free Thrombus in the Heart as Cause of Sudden Death. (Freie Herzthromben, speziell im linken Vorhof, als Ursache plötzlichen Todes.) J. Tillgren.
161 The Blood Findings in Case of Dementia Praecox with Periodical Fluctuations. (Blodundersökningar vid ett fall af dementia praecox.) G. Kahlmeter.
162 Test for Elastic Tissue in the Sputum. (Einfache Methode zum Nachweis von elastischem Gewebe im Sputum.) I. Hedenius.
163 Chondrectomy for Emphysema of the Lung. (Fall von nach Freund operiertem Lungenemphysem.) E. O. Hultgren and E. Key.
4 Diabetes Mellitus Following Contusion of the Liver Region. E. Salen.
5 The Metabolism, Especially the Metabolism of Minerals, in Two Boys. (Zur Kenntnis des Stoffwechsels und bes. des Mineralstoffwechsels im Knabenalter.) I. Jundell.

133. **The Red Corpuscles in Advanced Tuberculosis.**—ullbring tabulates the findings in 131 patients in the third tage of pulmonary tuberculosis. The largest numbers of eds were in the cases with symptoms suggesting amyloid egeneration. The signs of amyloid degeneration are the ard palpable liver and the changes in the nails known as 'watch-glass nails." Holmgren called attention in 1913 to his amyloid syndrome as he called it; he had found it ronounced in 85 per cent. of the cases of amyloid degeneration; in 88 per cent. of the patients with nails showing these changes there were unmistakable signs of amyloid degeneration. At necropsy in 32 cases Gullbring found pronounced amyloid degeneration in every case in which during life the liver could be felt large and hard and the nails were of this *Uhrglas* type. He excluded from the 131 cases listed here all those with hemorrhage, diarrhea or noticeable dyspnea or fever. The only American work cited by Gullbring is Swan's in The Journal, 1904, xlii, page 696.

138. **Innervation of Abdominal Muscles.**—Söderbergh compares what others have written on this subject with his own findings. He has noticed signs of paresis in certain muscles with tumors compressing certain roots, and thinks that analysis of such cases would supply data enabling us to locate a spinal tumor long before the symptoms usually depended n for the topical diagnosis have developed.

riations in Cholera Virus.—Olsson's report of his ultivation and study of cholera germ-cultures fills nd is accompanied by five full-page plates.

amination of the Lungs.—Waller mentions a num- inor points he has found useful. such as asking in det after the health of the father, the mother, the brothers, th sisters and children, instead of merely inquiring whether there is tuberculosis in the family. A negative general repl- is usually given while inquiring separately after the va members of the family revealed tuberculosis in near tives in 70 or 80 per cent. of all his sanatorium cases. inquiring as to the spitting of blood, other causes f than tuberculosis must always be borne in mind. monary tuberculosis does not always entail coughing, at f Ask the patient whether he has occasion to hawk at ti and if he brings up anything; also if he cannot sleep fortably in certain positions; many of the tuberculous treated for rheumatism alone.

148. **Acute Veronal Poisoning.**—Mattisson reports cases with the elimination of the drug in the urine const supervised. Fully 90 per cent. of the drug was cast o this way but the elimination proceeded very slowly, tinuing up to the eighth, tenth and twelfth days in his c

151. **Dangerous Hemorrhages from Gastric Ulcers.**—l berg tabulates the details of 68 cases of gastric ulcer *hemorrhage so severe as to raise the question of an em*ency operation; 5 died. These 68 cases were encountered at Faber's clinic at Copenhagen among 550 patients with ulceration in the stomach. All the 68 patients were given conservative treatment alone and in the 5 fatal cases necropsy showed that conditions could not have been remedied by operative measures. Comparison of all this material with the operative cases on record from other clinics has convinced Lindberg that surgical measures are never indicated in case of an acute hemorrhage from the stomach or adjacent bowel. On the other hand, recurring hemorrhages, especially when the anemia keeps up during the intervals, require operative treatment and it should not be delayed too long. Stimulants and saline infusion increase the tendency to hemorrhage. The foot of the bed can be raised, but morphin should not be given, not even when there is painful spasm of the pylorus. A subcutaneous injection of 400 c.c. of a 10 per cent. solution of gelatin can be given daily, and Lindberg has been very favorably impressed with the efficacy of rinsing out the stomach with a 1 per cent. solution of ferric chlorid. He pours 100 gm. of this into the stomach through a soft stomach tube and then pumps it out again after a few minutes. This is repeated until the fluid comes away clear, which is generally the case after four or five rinsings. Along with this he injects the gelatin.

153. **Abscess in the Lung.**—Jacobæus applied artificial pneumothorax after evacuation of the acute abscess in 3 cases and with marked benefit in 2; the other patient is still under treatment. In 2 cases of old foreign-body abscess he improved conditions materially by keeping the patient in bed for a week or so with the foot of the bed raised 30 cm. and the patient lying on the sound side. All this improved conditions for drainage so that the disturbances subsided. Afterward he slept nights in this position and when the disturbances returned again a few months later they were improved again by a course in bed as before. The hope has not yet been given up that the scrap of fir in the lung may still be coughed up.

In another foreign-body abscess there was no trace of anything wrong in the bronchi; the abscess was in the left hilus and what seemed to be a scrap of bone was finally coughed up. The absence of any lesion in the bronchi and of any history of a foreign body render plausible the assumption of a concrement developing in the lung. In 2 other cases there was a chronic abscess; one was opened up and cured. The other was of fourteen years' standing and an unsuccessful attempt to apply pneumothorax treatment did not avert the fatal outcome and possibly hastened it. In 2 cases of acquired bilateral bronchiectasia of ten years' standing, the phrenic nerve was severed on one side, followed by resection of part of the chest wall. The benefit from the phrenicotomy seemed to be marked, but the second patient did not survive the operation on the all.

158. **Diagno ent of Gastroptosis.**—Troell devotes 50 eight cases given operative treatm His conclusions are that to at is pathologic in

Norsk Magazin for Lægevidenskaben, Christiania

January, LXXVI, No. 1, pp. 1-144

- *Tumors in the Sympathetic Nervous System and Suprarenals. (Om svulster i det sympatiske nervesystem og i binyrernes medullaris—og særlig om de maligne neuroblastomer.) F. Harbitz.
- *Injury from Competitive Athletics; Seven Cases. (Varig skade paa helbreden forvoldt ved idrætsøvelse.) P. Torgersen.
- Improved Technic for Determination of the Reaction of the Urine. H. F. Høst.
- *Chronic Intestinal Stasis. S. Widerøe.

66. **Tumors in the Sympathetic Nervous System and rarenals.**—Harbitz refers in particular to the tumors inating in the sympathetic nervous system and medulla the suprarenals; they are made up of undifferentiated ryonal nerve tissue and are of extremely malignant vth. In order to understand their development, the ryology of the sympathetic nerve must be comprehended, e explains in detail, illustrating his remarks with four cases from his own experience: a boy of 3 who did not survive the removal of the large neuroblastoma on the front of the sacrum; a six-months' infant apparently healthy until at five months he developed obstinate diarrhea and the abdomen protruded as the liver became much enlarged. Necropsy revealed a primary cystic tumor in the suprarenal medulla with metastases in the liver. In the third case the neuroblastoma in the sacral region was as large as the trunk of the four-months' fetus. The fourth was a fetus weighing 1,150 gm., the teratoma in the sacral region weighing 490 gm.

There are nearly fifty cases of true neuromas on record, he says, and almost all were in the sympathetic nervous system. This form of tumor does not generally incline to infiltration or metastasis. The malignant type of ganglioneuroma occurs only in children, as a rule, such tumors seeming to be less malignant in adults. The third type of tumors belonging in the category under discussion are the so-called paragangliomas or chromaffin tumors, located in the medulla of the suprarenals or carotid gland, of which from twelve to fifteen cases have been published. They are typical epithelial tumors on the borderline between benign and malignant growths. Sometimes they are merely diffuse hyperplasia and they may develop in persons with a tendency to multiple neurofibromatosis. The cases of this type on record are analyzed, including four cases of tumor in the carotid, all in adults, and all were removed without much difficulty. In conclusion Harbitz reports the case of a man of 47 with a large hypernephroma in the left kidney with numerous metastases, a cystic adenoma in the pancreas, a chromaffin tumor in the suprarenal region and another in advanced degeneration in the right kidney region. Most of these numerous tumors were of widely diverse structure. Thirteen illustrations accompany the article.

167. **Injury of the Previously Sound from Competitive Athletics.**—Torgersen comments on his experience that patients seldom or never connect any morbid manifestations later in life with athletic strain during their younger days, and the physician rarely inquires in regard to such antecedents. This is his explanation of the scanty literature in the Scandinavian countries on permanent injury from overstrenuous exercise. In the previously healthy the injury soon rights itself, as a rule, but that this is not always the case he shows by seven instances which he cites from a much larger experience, and is convinced that if physicians will bear this possibility in mind, many more such cases will

exceptionally strong and robust man of 20 after one we of training took part in a rowing match and was exhaust at the close, pale, trembling and vomiting, and for yea afterward complained of recurring pains in the heart regi and difficulty in breathing even after slight exertion. T trainer was a good executive and instructor but he lack the fundamental knowledge of physiology which wou have prevented his consenting to a man's entering the ra with only one week's training. In some of the other cas also the training was crowded into a few days and the m afterward proved unfit for military service; one develop chronic neurasthenia, blasting his career. Another you man after a good course of training had slight tonsilli the morning of the big race, but felt well, and temperatu and pulse were normal. He collapsed within 300 feet of t goal with signs of heart weakness and during the since then he often complains of shortness of breath and sensation of oppression. Valvular disease developed three others after training for ski work or for all-rou athletics; one student of 20 collapsed during a race, t others collapsed while keeping up vigorous gymnasiu exercise and working at a fatiguing business during the da

169. **Chronic Intestinal Stasis.**—Widerøe reviews his exp rience with 23 cases of this nature in his service since 191 The ages of the patients ranged from 17 to 71 and all b 5 were women. An operation was deemed necessary only 3 cases, and in these the appendix and the genital orga were found normal but the cecum was very large and loos with adhesions. In 16 cases the family physician had se the patient to the hospital urging an immediate operatio but in all the cases the trouble was merely chronic intesti stasis. Widerøe reviews the various disturbances whic stagnation of the feces is liable to entail; he also analyz the various factors liable to cause the chronic stasis, citin the details of a number of cases. In his own experience th patients paid no heed to their chronic constipation, and di not mention that intervals between stools of from two t eight days were the rule. In 2 cases there were symptom of incipient peritonitis and in another an attack of coli In 4 cases the vague pains in the stomach, back and lowe abdomen with dysmenorrhea led to the diagnosis of gynecologic trouble. In 2 others dyspepsia was the main disturbance. Roentgenoscopy may be necessary in case a kin or band is suspected as the cause of the constipation Mothers should be warned that children may be constipate even with a daily passage, and that this tendency to constipation may increase as they grow up, especially in girls. They must be taught to heed the slightest impulse to defecate, and be trained in regular habits in this respect. A few gymnastic exercises, including deep breathing, with a bland diet, will generally regulate bowel functioning in the young. At all ages, the food should contain nothing to irritate the bowel, no alcohol, coffee, sharp condiments, etc., and tobacco should be used sparingly if at all. Mayr advises exercising the abdominal and trunk muscles three times a day, by deep breathing, by rising from the horizontal to the sitting position without the use of the arms, bending the trunk forward and back and sideways during deep breathing, and bending the hip and knee, standing on the other foot. Widerøe adds that half a glass of cold water, fasting in the morning, with or without half a teaspoonful of cooking salt or Carlsbad salts may prove useful. Liquid paraffin is found of great benefit in some cases. It is not absorbed, he says